Swiss bankers face a money surplus *(p 18)*

•

TOO MANY JETS? *(p 16)*

O.S.

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July 1961

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McGRAW-HILL INTERNATIONAL MANAGEMENT'S

American Letter

Weapon in the cold war

President Kennedy is making economic aid his primary weapon in the Cold War—all the more since the U.S.A.'s setback in Cuba and Laos.

Kennedy's aid plans are big. He is asking Congress for authority to borrow from the Treasury—bypassing annual appropriations—up to $7,300-million and for authority to re-lend another $1,500-million of foreign debt repayments. The money would finance long-term development over five years.

The total aid request for next year is $2,650-million, or 500-million more than last year. Congress willing, the rate of long-term development financing will more than triple after 1962.

Kennedy's goal: To finance a "middle class" revolution, with strong democratic-social overtones, in the underdeveloped nations to counter Communist-sponsored "proletarian" revolutions. Efforts will be concentrated where rapid economic and social progress appears possible. This means that key countries such as India and Pakistan, Brazil and Argentina, will get higher priority than before.

But there are no illusions in Washington. Weak nations such as Korea and Iran will be subsidized regardless of performance. It has become almost a proverb: "The weaker they get the more help they need the less able they are to help themselves."

There are second thoughts about funneling aid through international organizations. More money will go through the United Nations and the Inter-American Bank, to be sure. But if politically painful social reforms are to be sponsored, direct U.S. control over aid seems essential.

U.S. private investment in underdeveloped nations will be tied closer to government policy, if Kennedy has his way. He wants broad authority to offer guarantees to investors. And with this in hand, he hopes to persuade private firms to make investments that mesh with over-all development efforts.

There are formidable obstacles in the way of Kennedy's program. Congress is reluctant to give him the authority he wants. And under the best circumstances, democracy is difficult to export.

. . . In a time of crisis

The fact is, circumstances are far from their best. Political deterioration seems to be accelerating in many parts of the world. Paradoxically, this is the best hope for Kennedy's new program—in Congress, and in nations that receive U.S. aid. It is hoped that events are finally creating a real sense of urgency.

For Latin America, the "Alliance for Progress" is seen in Washington as the last best hope of stemming the advance of Communism. Thoughts of military intervention in Cuba, or of trying to quarantine Castro through the Organization of American States, have been put aside. Much now depends on the Inter-American Economic Conference in Montevideo this month. Washington counts on favorable actions.

In Southeast Asia, the U.S. has dismissed Laos as an asset to the free world. Despite hopes for a neutral Laos, this may mean the balance of power in Southeast Asia is shifting to the Communists.

U.S. planners worry about the uneasiness surging through parts of Southeast Asia. Neutralist talk makes the Western powers less enthusiastic about fulfilling their commitments; this in turn makes Asian leaders think seriously about accommodations with China.

In Washington, planners are still debating how to deter the Communists. A middle ground, half way between disengagement and a showdown, now seems to be policy. This means combating the Communists, meeting thrust with counterthrust, wherever it is politically, tactically, and logistically possible.

A split in labor's ranks

Contract negotiations between the United Automobile Workers and the big auto companies are now underway in Detroit. They bear watching. Because of unexciting car sales and automation-caused unemployment, the bargaining power of the union is weak.

At the same time, the prestige of Walter Reuther, head of the auto union, is at stake. Reuther is also head of the Industrial Department of the AFL-CIO. This is the "CIO" wing, as opposed to the AFL craft workers (carpenters, electricians, etc.).

Reuther's prestige is important because the AFL-CIO faces a critical internal crisis. The industrial workers are furious with the craftsmen. They charge that the building trades are trying to take over maintenance jobs in industrial plants, jobs that rightfully belong to CIO-type workers. This jurisdictional dispute is causing increasing strife in industry.

Unless he can lead a fight to win back jobs for industrial workers, Reuther faces a revolt of local "CIO" leaders. And unless he comes out of his current bargaining test with his prestige intact, Reuther may not be in a position to prevent a schism. If not, labor will split into two warring camps.

The Other Cambridge

Increasingly today, universities are regarded as collections of experts in a world that lives on expertise. One of the most formidable collections is at the U.S.A.'s Harvard University, Cambridge, Massachusetts. Adapted from Business Week, *here is a report on this international institution.*

Universities are deeply affected by the social and technological changes sweeping the world. And Harvard is an undisputed leader in seeking a new role in society for the university. As the director of the school's libraries puts it: "This is a world of experts—and Harvard is in the business of supplying experts."

Harvard is not the biggest American university. Nor is it the "best" in all fields. But it has so many scholars in so many different fields that it is both a national resource and an international institution. President Kennedy did not "hire" so many Harvard professors for his White House staff because he himself is a Harvard graduate (1940). Wherever he had gone to school, the President would have found himself turning to Harvard for talent.

In seeking a new role in society, Harvard is responding to three great forces in the world. As President Nathan M. Pusey sees them:

—First is the need for a level of education higher than anything demanded before. Harvard, for instance, now invites scholars back to the university for a period of study, a time for catching up on advances in their fields.

—The second great demand is for the direct services of experts. Harvard has always believed in a balance of teaching and research. But today most professors have to find time for consulting work. This alone is enough to change the old idea of the university as a cloistered community of scholars to that of a body of experts.

—The third great demand is international. A Harvard economist unobtrusively serves as head of advisory groups to Iran and Pakistan; a public health specialist directs a research attack on trachoma for the Arabian American Oil Co.; business teachers advise on setting up management schools all over the globe. A law professor comments: "The jet plane is shrinking the world —and forcing us to learn whole new bodies of law." Two thirds of the books and periodicals bought by the Harvard libraries are in foreign languages.

Meeting the needs of such a demanding world will not be easy, of course. Dean Keppel of the Graduate School of Education says that Harvard could never turn out the great quantity of teachers needed to raise educational standards in the U.S., much less the world. But it may be possible to make a contribution by research, by using new approaches like the teaching machine (see "Technology" in this issue). "We can," Keppel says, "set the style."

Setting another style, men from different departments —say, economists, historians, and psychologists—get together in Harvard's famous "centers" to tackle world problems, such as Russia's cold war strategy. Since World War II Harvard has set up centers for Russian Research, Middle Eastern Studies, Far Eastern Studies, International Affairs, for the Study of History and for the Study of Liberty. Soon the university will have a center for the Visual Arts, in a building designed by Le Corbusier.

There are still some ivory towers. In Agassiz Hall, men chip the bones of a brontosaurus out of rock with dental tools. In another laboratory, a group uses electron microscopes to probe the secrets of the cell. And throughout the school runs a feeling that this basic research will bring fundamental reappraisals of medical practices.

These activities, and uncounted others going on around Cambridge, put Harvard on the frontiers of science and society. Its achievements are best summed up by a witticism: "If Harvard did not exist, the Ford Foundation would have to invent it."

Harvard graduates are the best evidence of the university's education: Among them number six Presidents of the U.S. and seven Nobel prize winners. Yet Harvard continues to raise the intellectual level of entering classes. One dean notes, "We have eliminated the bottom half of the class." Harvard is narrowing the distinctions between honors students and the rest of the class—in effect putting everyone on honors programs.

For its more than 13,000 students, the university has 4,600 "teaching officers." For each professor with a permanent appointment, however, there are perhaps five younger men—lecturers, instructors, research assistants —who are working toward it. Inevitably, most will not make it and will have to leave. The pressure to be outstanding is tremendous, perhaps at times unhealthy.

But a permanent appointment brings reasonable freedom from financial worries (the average professor is paid $16,000 a year) and guarantees a freedom to express unpopular opinions.

Harvard deans are powerful men running huge educational institutions on their own. They control their own funds, and they also have to raise them. The Dean of the Faculty of Arts and Sciences, for example, administers endowment funds of $157-million and an annual operating budget of $28-million. (Overall, Harvard has endowment funds of $621-million, an operating budget of $73-million.)

Against the power of the deans, the president has his own endowment fund of $52-million. He can use his fund to start a new department or support an old one; he also has the power to close departments. But Nathan Pusey's real power comes from having the final word on faculty appointments.

It is this curious check-and-balance between the president's power and autonomous units run by strong, respected men that keeps Harvard what it is.

Pushing for a bigger Europe

Fast-increasing incomes can mean trouble in this day of regional trading schemes. Look at the problem of the affluent Danes.

Late in May the Danish central bank raised the discount rate to a towering 6½%, surpassed on the continent only by Greece. And Danes were put on notice that austerity lies ahead.

The rise in Danish money incomes has recently been unprecedented, even in booming Europe. Consumption is rising much faster than production—and productive efficiency. One result is a worsening balance of payments deficit. Most observers expect that new fiscal measures to be enacted by autumn will help bring down the temperature of boom, but the central bank apparently did not dare wait.

Business' worry is that tight money will be a serious brake on Danish efforts to raise industrial efficiency. This Denmark must do if it is to meet the competition of the European Common Market.

There is little doubt now among Danes that they must, and will, join the Six. Indeed, Danish officials have been trooping around Europe, announcing their intentions, trying to smooth the way for an accommodation between Britain and the Six. Until recently Danes hoped that some kind of association could be worked out between Six and Seven, for they need both Britain and the Continent to survive. Now they are convinced Britain will join the Six, and they are doing their best to hurry London along, while preparing to jump in themselves.

Despite the competitive challenge, Danes want to see as wide a trading system as possible. The Prime Minister, Viggo Kampmann, told the International Chamber of Commerce in Copenhagen (see page 4) that all West Europe should be brought together in a single common market and, further, that the prospects of an Atlantic Community, linking North America and Europe, "has our keenest interest and support."

Britain's position

Debate over Britain's intentions toward "the Six" now has three angles:

The first angle: A politically bipartisan committee called the "Common Market Campaign" has enlisted the support of over 100 of Britain's most prominent politicians, industrialists, economists, and trade union leaders. They argue that membership in the EEC would not damage the Commonwealth, that home agriculture would not suffer drastically, that problems of the competitive "Sixes and Sevens" are negotiable.

The second angle involves the negotiations in Geneva concerning tariff reductions by members of the General Agreement on Tariffs & Trade (GATT). The six-nation EEC is offering a 20% reduction in its common tariff in exchange for concessions from other GATT members. London may decide to hold back on concessions to conserve its bargaining power for direct negotiations to join the EEC. But, comments London's Economist: "The real British need is to keep up the dynamic toward free trade in the free world."

The third angle is the position of sterling: It continues weak, and there is fear that the weakness is structural rather than temporary. Exports—particularly "invisible" earnings from petroleum, shipping, etc.—are down. Imports are up. This leads some Britons to the view that imports should be restricted. With the Europeans stockpiling sterling, they hold the first order of business is to stem the balance of payments deficit.

The price war in petroleum

The Soviet Union may step up its price war in world petroleum markets. The growing surplus of Soviet oil is one reason. Another is that Russia is running a heavy balance of payments deficit. In two recent months, Moscow sold at least $200-million worth of gold—almost as much as was sold during all of 1960. Most was bought by West European central banks.

Oil appears to be Russia's best bet for increasing its exports. A major breakthrough in Western markets has been made in Italy, where Soviet oil will account for about 8% of oil imported this year. More and more, these Soviet contracts are setting the world's true level for oil prices, as opposed to the "posted" prices of the international oil companies.

As a sidelight, note that the U.S.S.R. is entering a period of delicate relations with the Middle East oil-exporting countries.

The hard road ahead

Based on value produced, industry is now 1.9 times bigger than agriculture in the United Arab Republic. And industrialization continues apace—$1,100-million alloted in the fiscal budget starting this month. Since 1957, Nasser's industrial program has created 162,000 jobs, envisages another 150,000 by 1965. This is progress. But it makes a discouragingly small dent in a population of 30.5-million people.

Congress in Copenhagen

To the residents of this Danish capital, it must have seemed like the height of the tourist season. What brought so many visitors to Copenhagen in late May?

Suppose you were a businessman interested in the work of your trade association or local chamber of commerce. Furthermore, your wife believed she deserved a holiday, and had always longed to visit Copenhagen. As a result, you decided to attend the XIII Congress of the International Chamber of Commerce. During the five-day whirl of meetings and social activity, you could have learned—

—that the Danes must surely be the most charming and thoughtful hosts in the world, feeding (extravagantly) and entertaining (royally) upwards of 2200 delegates and wives with assurance and aplomb, as if they mounted such a circus every month or so . . .

—that there is much to be gained from a week of informal contact with businessmen of other countries, even an interesting business possibility with those Americans you met . . .

—that many businessmen share your uneasy feeling that the attack on private enterprise is mounting, that the poverty of the underdeveloped nations threatens your own life and livelihood. Though the raw problems of the world seemed light-years away from orderly, prosperous Denmark, there were reminders in the urgency of some of the speeches, and in the persons of delegates from Asia and Africa.

The ICC—someone once called it the "Businessman's International"—is a voluntary non-governmental organization representing private business of 64 nations, through national committees or individuals. It has in the past been dominated by Europeans, Americans, and Commonwealth business people, but the effort to broaden the membership is slowly bearing fruit.

Its main work takes place year-round in 40-odd commissions and committees, and at bi-annual congresses the membership supposedly ratifies reports on taxation, commercial arbitration, advertising practices, patent protection, commodity and transport problems. Then national members are urged to press these views on their governments as a consensus of business opinion.

Most delegations reflect in one way or another their own government's policies. The ICC helps broaden their view—to occasionally put aside national prejudices and competitive instincts in favor of cooperation. And this is all to the good: there was the strong suggestion at Copenhagen that unless free-world businessmen hang together, they may well hang separately.

Contrast this with the last Congress, in Washington two years ago. A top German industrialist recalled that businessmen then seemed assured, even complacent in the knowledge that private enterprise was making gains in the world. In Copenhagen, they seemed more cautious. The 1960s have begun with a series of shocks. Bitter competition, the relentless push of the Communists, the urgencies in Africa, Asia, Latin America—all these have had a sobering effect.

The Congress in Copenhagen adopted a five-point Statement of Conclusions. One point: "The urgency of the world situation is such the management and workers, business and government, should clear their minds of out-dated prejudices and slogans and face the realities."

Here are some examples of the kind of things said:

• We as businessmen have to face the fact of strong government action, especially in the field of development. It will not go away. It is up to us as businessmen to work harder to establish a partnership with government, with each partner constantly explaining his situation to the other. We cannot take private enterprise for granted. (Hans C. Boden, Chairman of AEG and new President of ICC; IM—June,p19)

• We have to admit that public capital can and will do a large development job. So we must define more rigorously what private capital can offer that public capital cannot. We shall have to show, for example, that taxation of profits of private enterprise can be an efficient way for government to raise revenues . . . that dividends and return of capital from private investment are roughly the same as interest and amortization of public international loans. (Walter Hochschild, Chairman, American Metal Climax Inc.)

• Business must recognize the role of planning, which too often is deemed antagonistic to private initiative. The experiences of Japan, Italy, and France show that planning by government can be an ally of private enterprise. (Philippe de Seynes, United Nations)

• Businessmen have too often been inclined to mind their own business, tending to leave public affairs to others. And we are inclined to take the short-term view —this year's profits, next year's sales. Now private business faces the danger of being destroyed because of poor public relations. (Robert Garner, President, International Finance Co.)

• The support which the ICC and other collective efforts by business have received has in the past been half-hearted and grudging. Yet business collectively can be far more than the sum of its parts. (A. Maxwell Stamp, Britain's well-known economic consultant)

What does an ICC Congress accomplish? A British visitor was probably not far off the mark when he said:

"The primary reason for this binge is that the delegates cannot help but absorb something—through their pores—that will encourage them to push harder, organize more carefully, exert more influence in public affairs when they get home. They need this kind of bucking-up."

Certainly such a large gathering provides a barometer of business sentiment about world affairs, and business' role in the world. Wise executives took the hint that there is a lot to be done in improving business' image before the Congress meets again, in Mexico in 1963.

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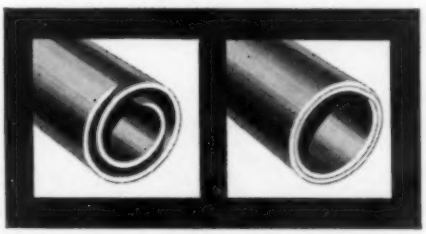

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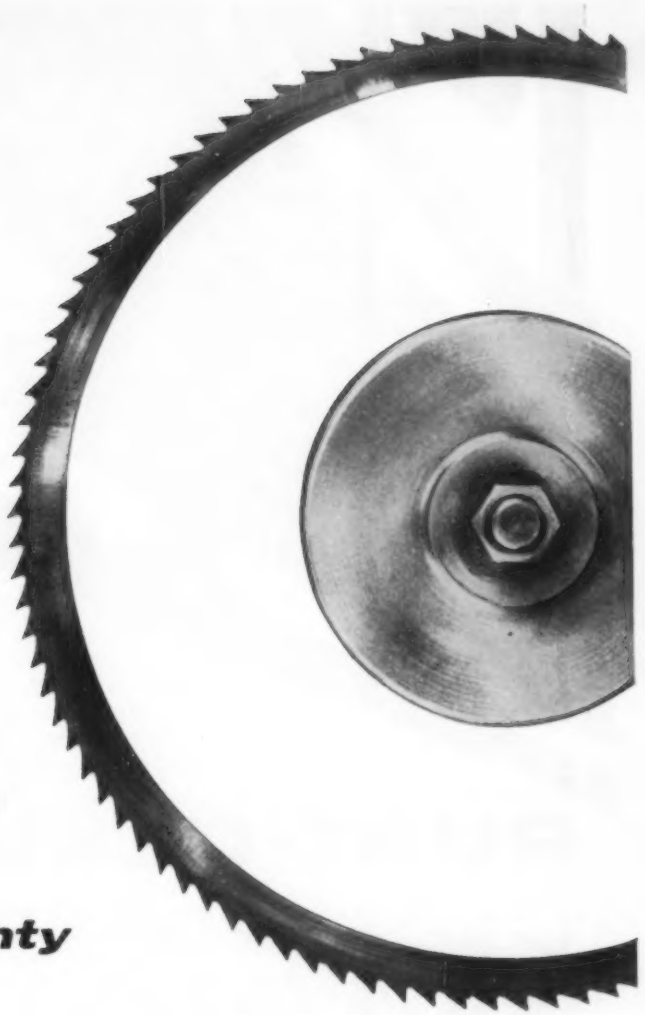

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READERS' REPORT

Diplomat?

Sir . . . The article on advertising (Challenge and Change in a Turbulent Profession"—Apr.) was very interesting, a bit depressing probably due to its accuracy, and cautiously optimistic. INTERNATIONAL MANAGEMENT belongs in the world of diplomacy—or maybe it is.

Peter Dunham
J. Walter Thompson Co.
New York, N. Y.

Under Dim Light

Sir . . . The recommended light levels for various industrial tasks, tabulated in the April issue of INTERNATIONAL MANAGEMENT, appear to be at fault. The recommended intensities are given in luxes, which is one candela per square meter. Under the heading "General Office Work," for example, it is recommended that only 9 luxes be provided, a recommendation that would be disastrous . . .

P. G. Keen
Manager, Lighting Division
South African Philips (Pty) Ltd.
Johannesburg, South Africa

Sir . . . In the article "More Light on Office and Factory Efficiency" there is a misunderstanding about the definition of a lux, the illumination unit in the metric system. The table has figures which represent almost one hundredth of the real value for the lighting levels required for the tasks listed. I am afraid that many readers in countries like mine would conclude that the poor lighting levels they actually have are higher than those recommended . . . In research here in some banks it has been found that the lighting levels are as little as 1/10 or 1/20 of what they should be according to I.E.S.

Napoleon Gianoli H.
Lima, Peru

• Our embarrassment would be less only if we could claim that we committed the error while working under dim light. The lighting, in fact, was ideal. We were trying to convert from footcandles into metric luxes, and: we multiplied (by .0929) when we should have divided, ending up with figures that were 1/120 what they should have been. The correct lighting in luxes:

IN THE FACTORY	
Rough machining, assembly...	540
Medium work	1,080
Fine work, fine inspection.....	5,400
Very fine work.....	10,800
IN THE OFFICE	
General work	1,080
Accounting	1,600
Drafting	2,160
IN THE WAREHOUSE	
Inactive storage .....50 to	100
Loading and trucking.....	200
Picking stock	300
Wrapping, packing	540

—EDITOR

continued over leaf

TOCCO
Induction Heating Anneals Pipe Welds ...In the Welding Line

Page Hersey Tubes Ltd., Toronto, Ontario, is one of several progressive manufacturers using Tocco induction heating to continuously anneal welds in electric seam-welded 4″ diameter and larger pipe to improve ductility and toughness.

The Tocco engineered and built post-weld stations are installed in the line following the welding station. Special Tocco developed inductors, powered by two Tocco high frequency generators, heat the weld affected area on pipe up to 8″ diameter ⅜″ wall to 1700°F at mill speeds. Annealing is accomplished with no extra handling of the pipe and with metallurgical results at the weld area not possible by any other method. The cost is only a fraction of what it would be if the entire pipe were heated in a furnace.

This is typical of the scope and ability of Tocco's engineering staff to solve metal heating problems with induction heating. If your manufacturing operations require heating metal for forging, heat treating, melting, brazing or soldering, it will pay you to check with Tocco for the latest and most effective methods for increasing production and cutting costs.

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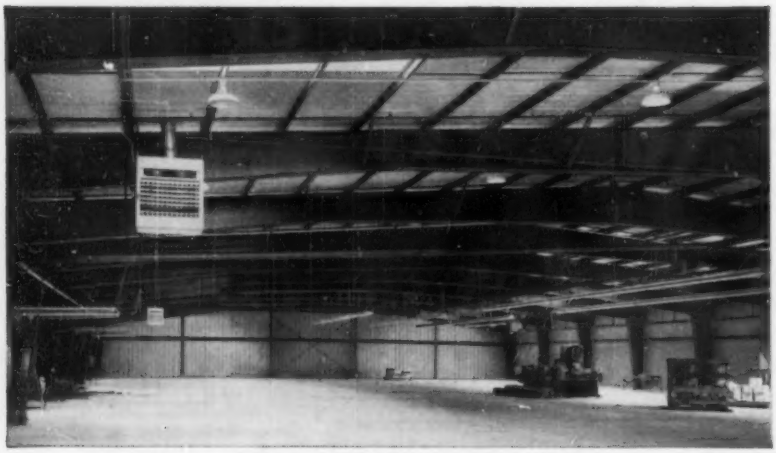

The effectiveness of the building that you build has a major influence on your success. This factory and warehouse are examples of different types of buildings that offer unusual efficiency. They are built with precision-manufactured Butler steel building components; and that means quality construction, structural strength, and weather-tight protection. Interiors are free from posts and columns. Thus, factory equipment can be arranged in the most efficient way. Or, you can store more merchandise in the same amount of space. Colored walls add distinctive beauty.

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Special Report

Sir . . . I have just received a copy of the Special Report on Japan reprinted from the February issue of INTERNATIONAL MANAGEMENT. You have certainly done a thorough job of reporting on the economic growth of Japan, and of the recent changes in the thinking and behavior of managers in this country. I have enjoyed reading it and wish to thank you . . .

Shunichi Takeuchi
President
Mitsubishi Oil Co., Ltd.
Tokyo, Japan

Sir . . . May I offer my congratulations on your Japan issue (IMD—Feb.). Even with all the experts around, most pieces about Japan are full of misunderstanding and misinformation. In my own areas of special interest, however, I had to look hard in INTERNATIONAL MANAGEMENT's articles to find anything to questions at all, and I hope your staff receives the praise it deserves.

W. J. Arnold
New York, N. Y.

Time-Saver

Sir . . . Having enjoyed your magazine for several months through the generosity of a friend, I now want my own copies—air mail—to read and retain. INTERNATIONAL MANAGEMENT is a terrific time-saver and every issue spotlights useful new material!

Raymond T. Murphy
Creole Petroleum Co.
Maracaibo, Venezuela

Permission Granted

Sir . . . The Training-Within-Industry Centre is an organization set up by the Government of India for the purpose of giving training and advice to business and industrial organizations on supervisory training.

We read with great interest the article "Three Founts of Modern Management" in the December issue of INTERNATIONAL MANAGEMENT and would be pleased if you would grant us permission to reproduce the article in our quarterly New Letter.

P. K. Sathe
Ministry of Labour,
Bombay, India

Cable from Caracas

CONSIDER YOUR APRIL ISSUE LILIENTHAL INTERVIEW OUTSTANDNG STOP CAN REPRINTS BE OBTAINED FOR LOCAL DISTRIBUTION . . .

Charles Urruela
Managing Director
Siderurgica Venezolana SA
Caracas, Venezuela

• They are on their way—EDITOR

INDUSTRY AFTER INDUSTRY, all around the world, has found that new Polysar* rubbers, produced by the Polymer Corporation Limited, have helped to solve a wide variety of raw material problems. The result has been a steady growth in production, leading to the present pre-eminence of Polymer among world rubber suppliers. Additions are constantly being made to these versatile elastomers. One of them could supply you with the answer to your raw material problems. A letter to the Marketing Division, Polymer Corporation, Sarnia, Canada, will put you in touch with a Polymer representative in one of 43 countries.

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Allis-Chalmers International, Milwaukee, Wisconsin, U.S.A.

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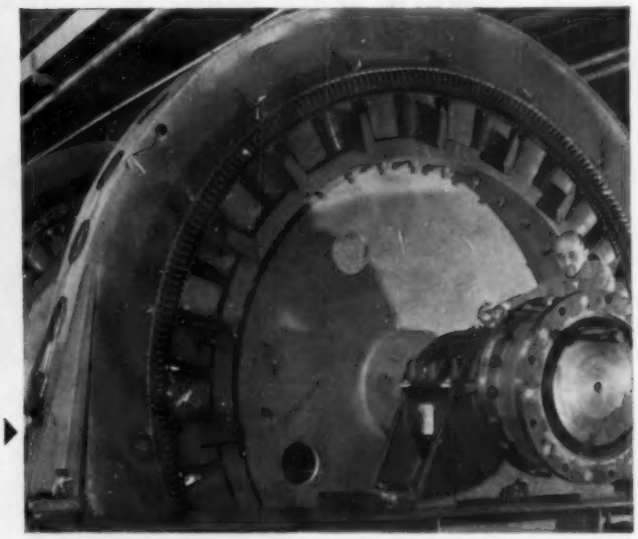
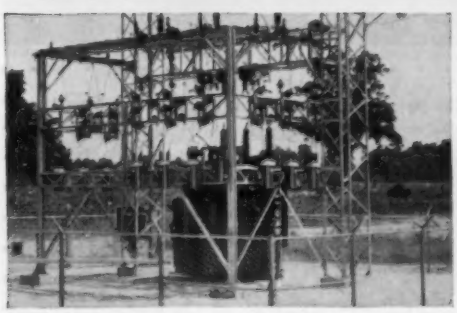
Serving the world in **MANUFACTURING • ELECTRIC POWER • CONSTRUCTION**

Building a superhighway in Mexico—Joining Mexico City and Puebla—this new road will reduce travel time from 3½ to 1½ hours. Allis-Chalmers tractors are moving a million cubic meters of rock and dirt on one section of the job.

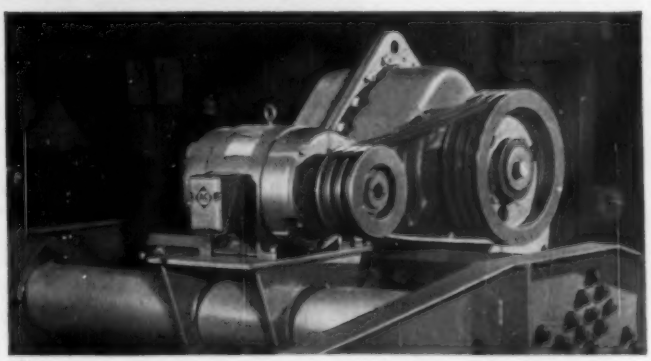


3,000-horsepower motors driving giant phosphate mills—There are four Allis-Chalmers 12 x 36-ft grinding mills in one phosphate-producing plant. Each mill is driven by a 3,000-hp Allis-Chalmers motor—probably the largest mill motors ever built.

High-priority improvement of West German airport to accommodate jets—This motor scraper was part of the Allis-Chalmers construction machinery fleet that leveled hills, extended and rebuilt runways of important Cologne-Wahn airport near Bonn, West Germany.



New standards set for substation compactness and economy—This unique Allis-Chalmers equipment is called a REGU/TRAN. It is standardized, easily installed and combines transformer and voltage regulator into a single unit which saves space and helps keep power distribution costs low.



New design development in vibrating screens—Allis-Chalmers now offers screens with direct mounting of motor—eliminates costly motor support structures and alignment problems, saves installation time and space, simplifies operation and maintenance.

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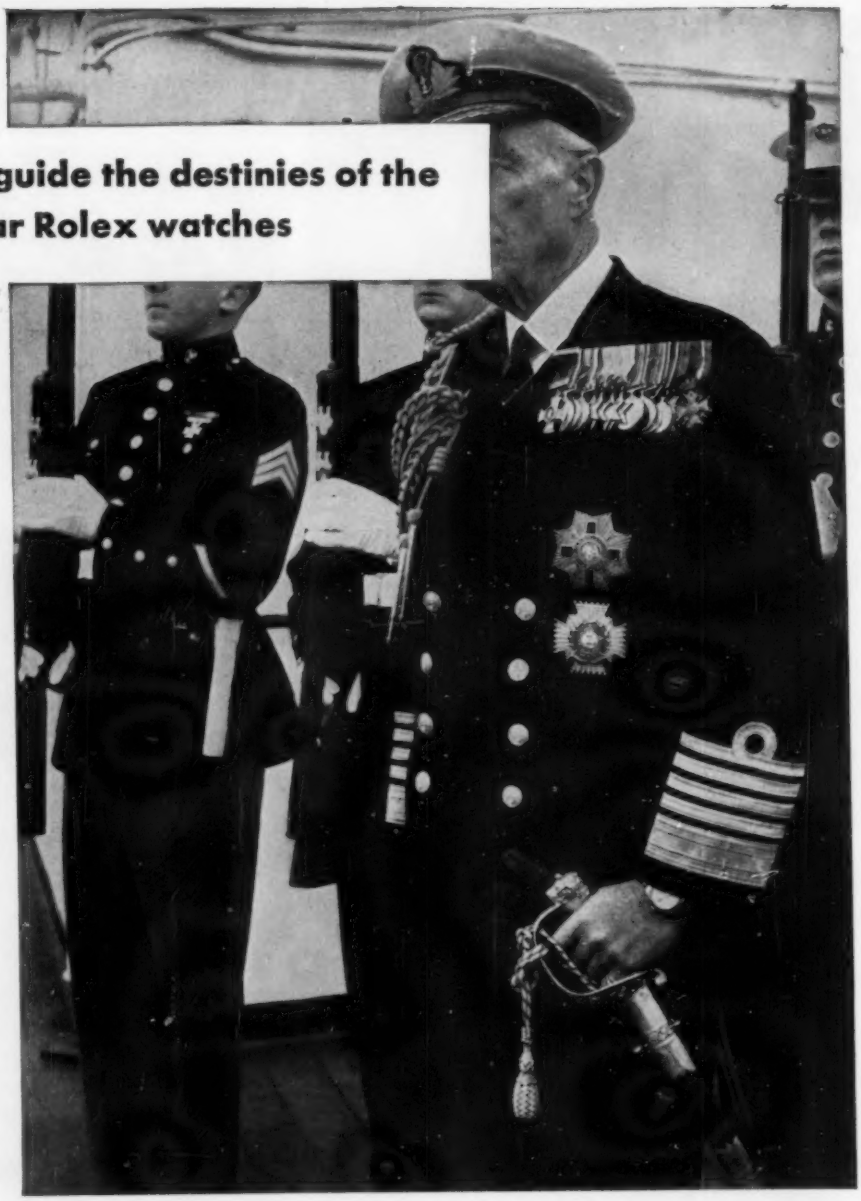

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YOU KNOW their names as you know your own. You know their faces from a thousand newspaper photographs, their life stories from a hundred magazine articles. You have seen them and heard their voices on newsreels and on your television screen. Their actions and decisions influence the pattern of our lives.

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Will world traders cooperate? President Kennedy hopes they will. Starting with textiles, he is testing a new kind of economic diplomacy aimed at getting exporters and importers to act voluntarily in . . .

Bolstering Free World Trade

U. S. AID to developing countries will be money washed down the drain unless the industrialized Free World is in a position to buy the products made in these new countries. This is one of the strongest views of the new administration in Washington. But it is a view that is balanced by pressures calling for protection of U. S. industries.

These conflicting forces are seen in President Kennedy's first major foreign-trade statement—his seven-point program for the textile industry. His position for this industry may set a pattern for others.

In his textile statement, the President makes it clear that he opposes a quota system on imports —as suggested by the U. S. textile industry—and that in all products and commodities he leans more toward free trade than protectionism "except in extreme cases."

• **Share the Problem**—The President has called for a world conference of textile exporters and importers aimed at seeking a voluntary agreement for stabilizing the world industry. The agreement would erect a mechanism for spreading the responsibility among industrialized nations to accept the products of less-developed countries. And it would get exporters to exercise self-restraint.

West Germany is a major target. Britain generally has been taking more than its "equitable share" of textile imports, largely because of its ties to Hong Kong and Commonwealth areas. The U. S. has not been as active as Britain, but it has been a better buyer than Germany.

President Kennedy clearly believes that the entire Free World should share in helping new nations develop their industries. And a labor-intensive commodity like textiles is one of the first that a rising nation can turn out and sell abroad.

The Kennedy administration hopes to avoid unilateral action against imports whenever possible. It therefore is seeking international cooperation, and at the same time attempting at home to relieve the problems of the domestic industry.

• **Domestic Efforts**—As part of his home program, the President would use public moneys for a vigorous research campaign aimed at new products and new markets for textiles. He would also give government assistance to communities injured by increased imports, and he would encourage textile plants to modernize by giving them favorable tax treatment.

The U. S. textile industry is particularly sensitive and important because of both real and political considerations. It is the nation's second largest employer of labor. This means it has a sharp effect on unemployment, particularly in the "distressed areas" that Kennedy has promised to aid.

Because it is a key segment of the economy, the textile industry has many friends in Congress. The industry today is spread throughout populous New England and the steadily industrializing South.

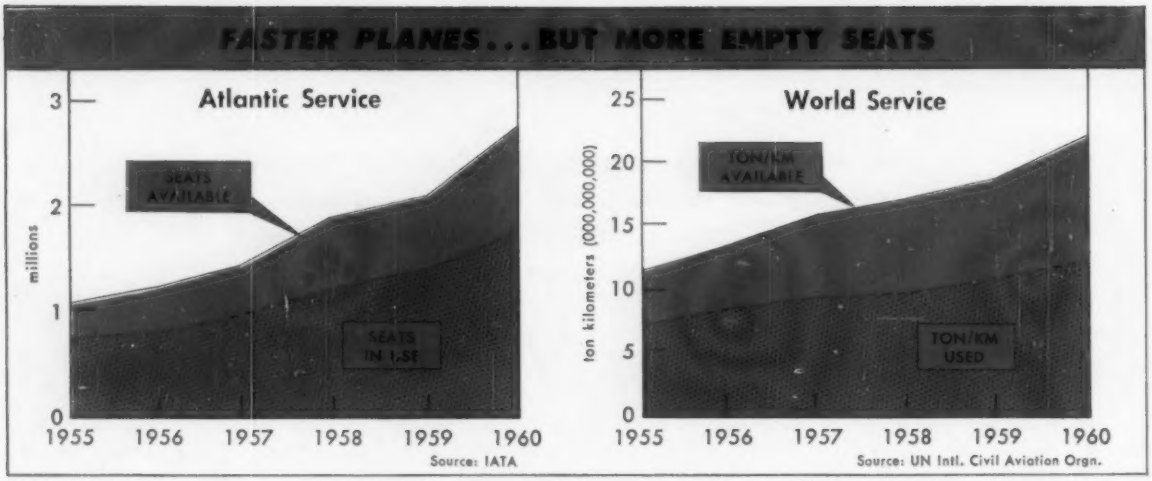
• **Last Resort**—If Kennedy's efforts at a world agreement between textile producers and consumers fail, he may eventually have to turn to textile quotas, despite his reluctance. Many Washington observers believe that he will have to do this as a preventive measure to save his overall program when the Reciprocal Trade Agreements Act comes up for renewal in 1962. They note with uneasiness that Hong Kong has already indicated its unwillingness to go along with any curtailment of its exports, and West Germany does not appear too friendly to the U. S. plan.

The consensus is that, if no solution is found for the textile problem, Congress will be extremely harsh with the President and his trade policies in 1962. Political observers are equally in agreement that if the textile industry can be satisfied or neutralized, other industries demanding protective tariffs will not make much headway in Congress. The result would be world-trade legislation with fewer inhibitions and stipulations.

Kennedy's textile proposal, if it works, would pave the way for similar agreements in the area of light-manufactures and other labor-intensive goods — transistors, radios, appliances.

• **Other Commodities**—The President recently ordered his aides to determine the feasibility of making firm proposals on international controls of several other commodities—coffee, cocoa, lead and zinc. He is expected to make proposals along this line to governments at the mid-July meeting of the Organization of American States. If commodity agreements for these products prove too difficult, some type of compensatory arrangement may be considered to aid Latin countries.

Though many details of the Administration's trade policies remain to be worked out—and they will have to change as conditions change —it is clear that Kennedy intends to use various approaches to international agreements as a means of ridding trade of harmful aspects. He apparently will try to help a faltering industry—at home, or in a friendly nation—with "adjustment assistance" more often than quotas or increased tariffs. ●



Airlines Scramble for Fares

Competing for services, they are also combining resources—and debating whether to cut fares to fill empty seats.

THOSE SLEEK JETS poised at New York's International Airport (cover picture) are a great triumph—and a growing headache—for the air transport industry. This month, as the international air travel season reaches its peak, the airlines are wondering how they can fill their huge, expensive planes with paying customers.

Jet aircraft have much more seating capacity than their propeller-driven ancestors. For example, the new DC-8 and the Boeing 707 (which cost approximately $6-million) can accommodate 160 passengers—compared to the 81 carried by a DC-7C. And jet aircraft can make two trips in the time it takes a propeller-driven plane to make one.

• **A Buyer's Market**—Time was when a passenger had to book far in advance to assure himself a seat on an overseas flight, or even on a domestic flight. Today, if a passenger's passport is in order, he can be on his way to any part of the world in a matter of hours.

This situation has created a competitive battle for passengers throughout the industry. Airlines are buying new models of jet aircraft as fast as they can be made.

But they are also attempting to consolidate their resources by mergers and combined services. They are heatedly debating whether to reduce rates, and they are wondering what added revenue they can expect from new routes and cargo service.

I. Airlines Combine

Competitive pressures have already forced some domestic carriers in the United States into merger, and recently, four Western European airlines have completed negotiations to set up an air union. They are now urging their governments to seek parliamentary ratification of the organization. They are: Air France, Alitalia, Sabena Belgian World Airlines, and Lufthansa-German Airlines.

These companies have found that as air transportation becomes more complex and capital investment requirements mount, it is increasingly difficult to handle cost problems singly.

• **Divide Revenues**—The main aspect of the air-union agreement centers on quotas which, at a future date, will divide revenues among the four carriers. The revenues will be based on ton/kilometers flown by the four carriers.

Some airlines such as Lufthansa and Air France have already found pooling and combining ticket offices will offset some of the costs of jet conversion. The ultimate aim of the new union will be to operate the international service of the four carriers jointly. The airlines, however, will not lose their respective identities, but will maintain their national markings.

You see the trend elsewhere: Brazil's three international carriers may soon consolidate—part of President Quadros' economy campaign. The move will also eliminate duplication of expenditures on aircraft and equipment. Varig airlines recently purchased 50% of the voting stock in Aerovias Brasilia, and both airlines will operate under a joint board of directors.

II. Reduced Fares?

Although airline officials believe chances are good that traffic will materialize to fill a profitable percentage of their seats during the 1961 travel season, they are studying ways of getting new business.

One of the most controversial would be a sharp reduction of fares and the introduction of low-cost excursion deals. Scandinavian Airlines System (SAS) and Air India already are actively seeking ways to get fare reductions. Air India has recently demanded an industry-wide fare cut of 20% by next year, estimating a possible 15% increase in passengers would result.

• **One View**—Lower fares can only work in the best interests of the public and the airlines, an SAS executive told INTERNATIONAL MANAGEMENT. "Today only a very small percentage of the traveling public can afford a foreign trip." High fares make foreign travel prohibitive for the middle-income person

who has only two or three weeks free, he says.

The result is that the industry is "slowly running out of a market at present fare levels." The repeat travel factor is now estimated at 35%. In other words, a great source of the industry's revenue comes from the high-income groups who continually travel. But this sector of the traveling public will not be sufficient to pay for the growing costs of jet aviation.

With lower regular fares and even lower-cost excursion rates (perhaps $500 for an all-expense round-trip from the U.S. to Europe) airlines might capture the vast potential market of middle-income travelers.

North Atlantic carriers in agreement with this arrangement see additional benefits. The flow of traffic between Europe and the U.S. has always been unbalanced during part of the year. Reduced fares—with an assist from Washington's new "Visit USA campaign"—may help even the flow by filling more west-bound seats during the height of the travel season, and thereby greatly increase air carrier revenues.

• **A Dissenter**—Some international airlines are opposed to any lowering of present fares. One of the biggest carriers believes the profit picture will be improving in the next year or so—with some of the less sturdy lines going out of business—and that fare reductions at this time would impose a burden, increasing traffic without any appreciable effect on revenue.

Carriers now are meeting in New York on the problem. A suggested compromise: a sharp cut in group and excursion fares.

III. New Horizons

Although North Atlantic air routes are the most active in the world today, two other areas—the Pacific and Latin America—are growing fast and having an important effect on the industry.

• **The Pacific**—Jet aviation has done more for transportation in the Pacific in the past two years than any other form of transportation has in the past thousand. Today the rate of growth of jet aviation in the Pacific is twice that of the North Atlantic.

Jet aviation has shrunk distances in the Far East. The entire Pacific area has become much more closely knit and international travel has ceased to be a major problem, thanks to the efforts of five major airlines now operating in this area: Pan American, Japan Airlines, British Overseas Airways Corporation, Northwest Orient, and Qantas.

• **Latin America**—In 1959, only two jet airplanes operated in all of Latin America. Today, eight major airlines have jet service to all large cities throughout the continent—a truly phenomenal increase that is indicative of the rapid worldwide jet expansion.

But Latin America, like other areas of commercial jet aviation, has its problems. Latin American airports have not kept pace with the jet travel boom, and many cities cannot be serviced until facilities improve. Short-range jets, like the Caravelle which requires less runway space, may be the answer to intra-continental jet service.

Nevertheless, travel between major cities of Latin America and the U.S. is growing at a rapid pace. Varig, for example, last year showed a 40% increase in passenger traffic between the U.S. and Brazil. And traffic on several other airlines appears to be growing just as fast.

• **Economy Fare**—To encourage travel to Latin America, all carriers servicing the area recently agreed on a reduction in fares. The new economy fares, which went into effect on May 15, offer savings to the traveler of 36% over the tourist fares which they replace.

Airlines already see an increase in traffic since the fares went into effect. With lower fares and improved airport facilities, Latin America is expected to develop into one of the most heavily traveled areas in the world.

IV. A Sleeping Giant

Busy scurrying after passengers, few airlines have placed much emphasis on developing their cargo business. Air cargo has long been called the "sleeping giant" of commercial aviation. Though a tremendous potential source of income for the airline industry, two major factors have held its development back—lack of adequate planes and high cargo rates.

The emergence of aircraft designed specifically for cargo purposes in recent years has done much to change this situation and has helped the growth of all-cargo networks. Many airlines, however, still use converted passenger-aircraft.

High cargo rates have been the biggest stumbling block to air cargo development. This is true even though air cargo men argue that reduced delivery time, lower inventory needs, and the cheaper packaging required often result in savings over surface shipments.

• **New Rates**—The International Air Transport Association recently put an end to this problem. At a meeting in Montreal, the entire rate structure of air cargo was changed. Now, the sleeping giant may be on its way to becoming the most lucrative side of civil air transport.

Most leading airlines had longed for rate cuts. But they always parted company on the question of how to cut them. U.S. airlines wanted to charge for air freight solely by weight, so much a kilo with discounts for big loads. European airlines wanted to vary the rates according to the contents of the parcel.

This has been extremely difficult to reconcile. But IATA has done it. Now, the new rate agreement provides for reductions of 22% to 65% from the old rates, with the reductions keyed to the size of the shipment—the larger the shipment the cheaper the rate.

• **Rosy Future**—Airline observers have no doubt the new rates will reshape the entire concept of air cargo. Last year, before the new rates went into effect, only 9-million kg of cargo were air-shipped across the Atlantic. But sea-borne cargo accounted for some 14,000-million kg.

Airlines note, too, that those 14,000-million kg originated about evenly from both sides of the Atlantic. This means that there will be an even flow of cargo east and west across the Atlantic.

As airlines complete their conversion to jets for passenger service, outdated propeller aircraft will be used for cargo planes. But eventually cargo will be hauled by all-jet fleets to avoid duplication of operating and maintenance costs. ●

Behind the austere facade: Too much money, too few investment opportunities. But the men of Zurich and Geneva are confident they can serve their clients discreetly and well. It's a tradition that . . .

Swiss Bankers Always Find a Way

SWISS BANKERS are suffering from an embarrassment of riches—too much money descending on them from abroad. This is not a new experience, of course. But bankers in Zurich and Geneva say that the huge inflow this year is creating special problems, because of the amounts involved and the scarcity of safe and attractive investment opportunities.

This does not mean that Switzerland's banking fraternity is turning away many potential clients. The Swiss take a quiet pride in their handling of other peoples' money; despite their complaints they are confident that they can continue to do the job.

• **Two types**—The Swiss say that the inflow of funds is of two distinct types: (1) There's a big increase in short-term "hot" money, which came in a rush after the German and Dutch revaluation in March; and (2) a steady inflow of funds for long-term investment.

This year's inflow comes on top of a flood of funds last year, which Zurich bankers refer to as the "dollar waves." There were, in fact, three separate "waves" last year, the first coming after the onset of the U. S. recession, the second after the Congo crisis, and the third during the October "gold rush", when a flight from the dollar bid up gold prices on the London free market from just over $35 an ounce to $40. Then, after a period of calm following the American election, the fourth wave, by far the biggest, broke last March. And with tensions continuing in Cuba, Laos, and Algeria, money has kept pouring into Switzerland.

Some steps are being taken to discourage the short-term inflows. Last year, the Swiss banks adopted a "gentleman's agreement" that entailed charging interest on deposits; and this spring they approved a new agreement to isolate short-term foreign capital from domestic deposits.

This scheme, worked out between the Swiss National Bank and the big commercial institutions, coupled with the plan adopted by Europe's central bankers (IM—June, p3), encourage the Swiss to believe that there is a good chance of checking rushes from one currency to another, or to gold. If they succeed, the Swiss think that movements of short-term capital are likely to be less volatile.

• **Long-term**—But Swiss bankers still are faced with the knotty problem of finding places to invest the funds sent to them on a long-term basis. This is a real test.

Management of money has been developed to a fine art by the Swiss, but it also has given rise to a number of conflicting myths about their qualities. One myth holds that Swiss bankers are practically omniscient in their investment decisions; this stems largely from their penchant for discretion. At the same time, the men of Geneva and Zurich are often regarded as old-fashioned—and inflexible—in their investing.

There's a germ of truth in both descriptions, but no more than that. As for their omniscience, one Zurich banker observes: "People think we have performed miracles because we never talk about what we are doing. But we make our share of mistakes." And as for being behind the times, the Swiss point out that this may apply to the cut of their clothes but not to their way of doing business. On the contrary, they possess a good deal of imagination as well as a "nose" for changing trends.

• **Timing**—For example, the Swiss began moving out of American stocks late in 1959, and kept selling when most of Wall Street was mesmerized with the notion of "The Soaring Sixties." But late last year, Swiss banks began buying heavily again. They felt that the American recession would be mild, and considered that stock prices were generally undervalued.

Many Swiss banks are continuing to buy American stocks for the accounts of their clients even though the market is at record levels. But there has been a switch in their purchasing policy. In the last month or two they have been putting most of their funds into cyclical stocks—steels, autos, machinery, etc.—which have been depressed in comparison with the high-priced "growth" issues in fields like electronics. The Swiss reason that the American economy is in for a handsome recovery, which should mean increased earnings for the cyclical stocks.

It's probable that most of the portfolios managed by the Swiss are heaviest in American equities. Swiss investment men also favor stocks available on their own bourses. This is partly because the markets for American and Swiss stocks are highly liquid, and with the huge amount of funds at their disposal, the Swiss want to be sure that they are able to buy—or sell—without too much effect on prices.

• **Europe, too**—But over the last two years, the Swiss have been investing an increasing amount in Europe, particularly in some of the companies with big stakes in the Common Market. Swiss bankers typically take a long term view and it is their confirmed belief, at least in private, that Western Europe is headed for economic—and political—integration.

The economic integration they envisage will involve a further "Americanization" of Europe, which they see as an upgrading of consumer tastes accompanying a

rising standard of living. So they are putting substantial sums into European companies in the leisure field and into real estate—including resorts—that promise to benefit from increasing consumer purchasing power. Some of the smaller private banks are active in financing speculative enterprises—bowling alleys, motels, home-building.

Swiss bankers are also looking into areas where comparatively little foreign capital has been invested. One big institution, for instance, is planning a mutual fund for investing in Spain. Other banks are already investing funds in Spain on an individual company basis, while still others are putting money to work in Yugoslavia.

• **Wet feet**—A few Swiss banks have ventured even further off the beaten track—into Africa and Asia. In the past, they had funds in some of the well-known South African companies and European-managed firms with big stakes in Africa. But now they have been looking into smaller companies. For the most part, they are not putting much money in such ventures, but as one banker observes, "We want to get our feet wet so that if things work out all right we will be in a position to do more."

If the Swiss have a secret it is in their ability to strike for the maximum gain with the minimum risk. They believe in risk-taking, and in this respect are much more willing to provide venture capital, or to forego good current yields, than other European investment men. But they also recognize that there are times when it is prudent to draw in their horns and leave the speculating to others.

• **Comme-ci, Comme-ca**—At the moment, they are in an "in-between" mood. Because they have so much money to invest, they cannot sit waiting. But because they think that there is a great deal of unhealthy speculation, in the U.S. and in Europe, they feel a high degree of discrimination is in order.

On one subject Swiss bankers put up a united front. They do not see any change in the gold price coming, and feel that speculation in gold is a waste of time. Yet the Swiss did not become bankers by accident. They are still willing to buy or sell gold for anyone who has the funds. ●

Japan's Building Contractors Look for New World Business

Skills developed in reparations work may help them compete for building dams and power plants.

THE JAPANESE soon may be pushing into a new industry—world construction—in sharp competition with U.S. and European leaders in this field. *Engineering News-Record* notes three factors that recently have been leading the Japanese into this profitable but highly competitive field:

—An indicated slowdown in the building boom at home.

—Increased Japanese skill and prestige, coming in large part from overseas jobs done recently in Southeast Asia as part of the nation's reparations program.

—Indications that the Japanese government in the future will help its construction industry get financing.

• **Major Handicap** — Japanese construction companies complain in private that their failure to get various overseas contracts in the past is the result of their government's "negative attitude." They note, with some bitterness, the aid the Bonn government has been giving to German contractors in helping them arrange needed short-term financing.

Short-term loans for the most favored construction jobs in Japan —a project for one of the zaibatsu, backed by the zaibatsu's own bank —normally commands at least 7.3% annual interest. Less secure projects may have to borrow at 9.5%.

Because of the serious problem of financing, Japanese overseas construction has been limited to situations where the government offers special credit or payment terms. These have mostly been projects for reparations to nations of Southeast Asia, which Japan invaded during World War II.

• **Impressive Jobs**—Reparations have led to some impressive work (IM—May, "Economic Development"): the Balu Chaung hydro project in Burma, the Da Nhim hydro project in South Viet Nam, a 14-story hotel in Djakarta, and the multi-purpose Marikina dam and power plant in the Philippines.

The Taisei Construction Co., one of Japan's "big five," is building the Hotel Djakarta in Indonesia. Materials are being paid for out of reparations funds, but labor costs are assumed by the Indonesian government. The 417-room structure, planned for completion in time for the Fourth Asia Games in 1962, is costing $8.5-million.

The $54-million Philippines project is aimed at supplying Luzon Island with large quantities of industrial and irrigation water, plus a 62,300-kw power plant. The Japanese will pay $35.5-million out of reparations funds, and the remainder will be met by the Philippines under a deferred payment plan.

• **In Brazil**—Outside the reparations projects, the most ambitious Japanese overseas job is the $220-million integrated steel plant for Brazil—Usiminas Siderurgicas de Minas Gerais, S.A. The project started in 1958. The first stage was scheduled to be completed by March 1962, but it now appears likely that work will be delayed a year or more.

The Japanese government is financing the project through the Japan Export-Import Bank. The Brazilians plan to repay their half over a 20-year period, but repayment is being complicated by soaring Brazilian costs.

Japan's participation in the United Nations' Mekong River (Southeast Asia) studies is another of its overseas undertakings. Japanese companies have three survey and design contracts for different phases of the work.

• **No Timetable**—The critical factor in any speculation on how fast and how far the Japanese contractors and engineers can move abroad is government policy, says *Engineering News-Record*. While the industry feels sure that a fundamental change in policy is coming, the Ikeda government to date has not revealed any timetable for this change. ●

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Thomas J. Bata Jr. (right) is rethinking the management problems of his business empire. It is a big job for the . . .

Free World's Biggest Shoemaker

BATAWA, a small company town in Canada, may seem an unlikely crossroads for a global industrial empire. But it is from an office there that Thomas J. Bata Jr. looks out on a business that extends through 73 nations.

Many persons are surprised to find him there. To them the name Bata is forever associated with Czechoslovakia, as well as with shoes. But it is a decade since the Czech government took over the Bata headquarters in Zlin.

Apparently the Czechs have stopped trying to export "Bata-made" shoes, and today "Western Bata" is bigger than the old empire ever was. With estimated sales of $300-million, 131-million pairs annually, Bata can claim to be the biggest shoemaker in the free world.

And it is growing fast, so fast that organizational changes may soon be needed. For the past year, Thomas Bata Jr. and his top executives have been investigating just what must be done.

• **Control at Top**—Batawa is not the formal company head office. There is none. Each of the Bata branches in 73 countries (all outside the Communist bloc) is separately incorporated. But for practical purposes, the whole complex is controlled personally by Thomas Bata Jr., the late founder's son. Except for small minority interests, all of the stock is held either by him or by two trusts. The beneficiaries of an older Swiss trust are several small charities and the companies themselves; and the sole beneficiary of a Bermuda trust is Thomas Bata Jr.

Though day-to-day operations are decentralized, overall supervision of the organization is handled by two service companies. Bata Development, Ltd., in London, provides staff support in sales, product development, and administration. Bata, Ltd., of Canada, has general responsibility for technical matters such as research and production.

The top executives of these service companies have professional specialties; in addition, each man retains some operating control over an area of the world where he has had long experience. And while they have small staffs of assistants, these top executives, and Thomas Bata Jr., constitute a flying squad that is continually traveling to where it is needed.

Of late, these executives, along with the top managers of the operating companies, have taken time out from their immediate problems to review the company's basic orientation. Recently, 20 top-level executives of the shoe company—from as far away as Nigeria and New Zealand—toured the U.S.A. for four weeks to study management techniques. Similar tours are planned for other Bata executives.

• **What They Saw** — The Bata men paid particular attention to big companies with foreign subsidiaries. They also spent four days at the Management Academy of the American Management Association (AMA), at Saranac Lake, New York. Then the group retired to Thomas Bata's headquarters in Batawa to digest and talk over their experiences.

Bata executives saw two general trends in American business. They felt that American managers, more than the rest of the world's businessman, are actively groping for an explanation of business' place in a free society. Several of the executives suggested that this aspect of U.S. business should be better publicized abroad, especially in areas where the Communists and other enemies of private enterprise are active.

On the other hand, American executives seemed more interested in the strategy—the "game"—of dealing with competitors and judging markets than in handling the details of day-to-day operations. As a Bata official from Latin America put it: "It is like playing a big chess game, plotting out the moves, and trying to outmaneuver the other fellow. Making money is almost a secondary consideration."

The Bata people felt they had little in common with this approach to management. Since many are working in underdeveloped countries, they tend to see production figures in very human terms rather than as mere numbers. The first shoes on a Congo tribesman's feet

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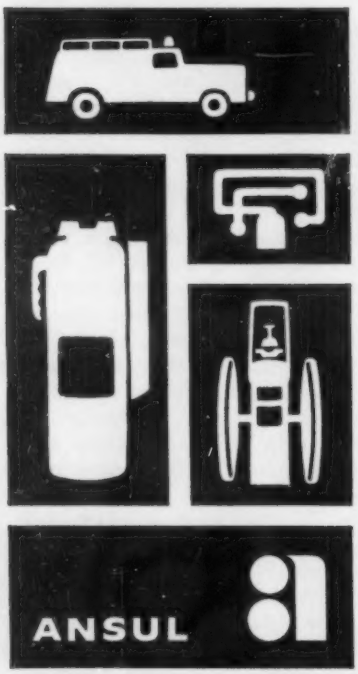

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After a four-week tour of U. S. A., Bata men discuss trends in American management.

are more than just a sale; they give him protection against disease. Payrolls in India seem more than just a part of production costs: Workers register their sons for jobs with Bata on the day they are born.

• **Highlight** — The highlight of the trip, according to Thomas Bata, was the stay at the AMA Academy. Bata is a director of the AMA, and he wanted his executives to get to know their American counterparts in an informal setting.

The Bata people also tried their hand at an electronic computer business game. They thought it was a good exercise for showing how interrelated the various aspects of business can be. This was especially true for the managers from underdeveloped countries where more sophisticated types of marketing are now emerging.

On their company visits, the group studied such things as personnel development and production planning, plant design, and the use of automatic machinery. Computers received special attention.

• **Bata Senior**—This recent tour by Bata executives was not entirely an innovation. The 20-man contingent was following in the tradition of Thomas J. Bata Sr.

At the turn of the century, he left his shoemaking shop in Zlin to study American production techniques. After several months of looking at New England shoe factories, he returned home. Within 30 years, he had built a shoe company of international standing. And until he was killed in a plane crash in 1932, Bata Sr. was practically a one-man management for the worldwide company.

Before he died, Bata believed the world was headed for another war, and that Czechosolvakia might not survive as an independent country. So he began setting up an alternate headquarters in London and shipping machine tools to Bata plants around the world. He made sure that Bata's worldwide assets were not owned by the Czech company: hence the Swiss trust.

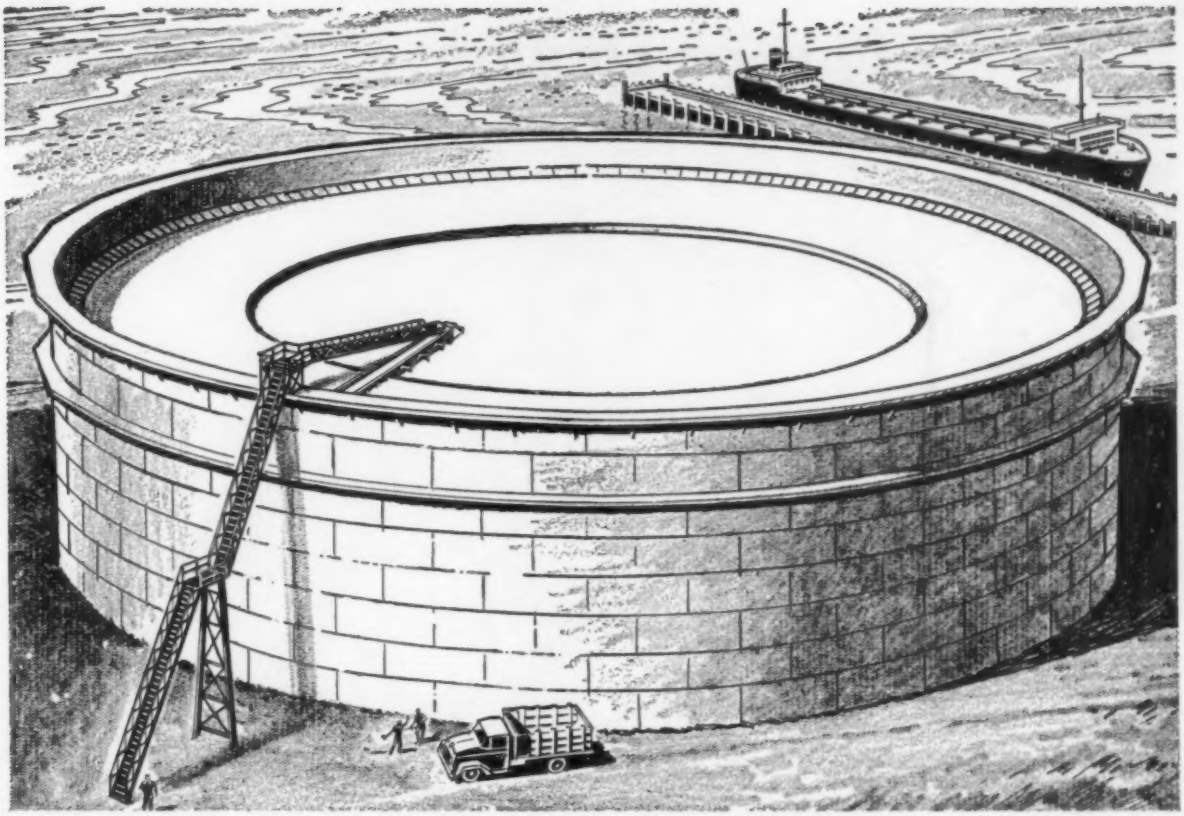
After the war, Thomas Bata Jr., by then a Canadian citizen, had a strong base for rebuilding the company. Along the way, he has carried on an international legal battle to wrest control of company assets from his half-uncle, Jan Bata. He says a court decision in his favor in Wilmington, Delaware last April settled the last major claims.

• **Complex Problems**—Today, the Bata organization has the same kind of problems that plague other decentralized companies. But Bata's difficulties are probably more complex. This is because it operates in so many countries, and because of the great diversity of shoe styles and qualities around the world.

Bata engineers designing automatic shoemaking machinery must not only deal with the staggering number of shoe styles, but must take into account the fact that feet in Indonesia may not have the same shape as those in Belgium or Brazil.

The chances are the company will keep its present operating philosophy, if not its present structure. After the recent U. S. tour, one staff head confided: "It would be very hard to give up the feeling that I had the responsibility for actually producing some shoes."

And many long-time employees find it hard to believe that Thomas Bata Jr., despite his genuine concern for management development, will ever find it possible to delegate much real power. Like his father, he wants to know what is going on everywhere. (*Business Week, May 13, p135*)



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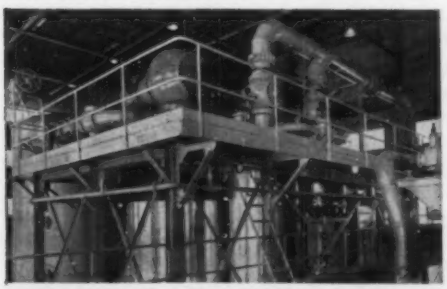

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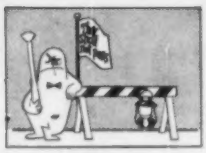
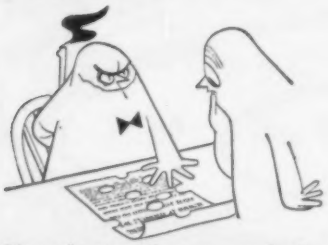
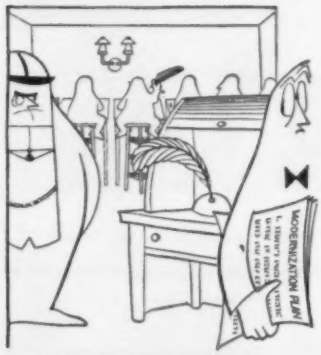


Plus ça change...

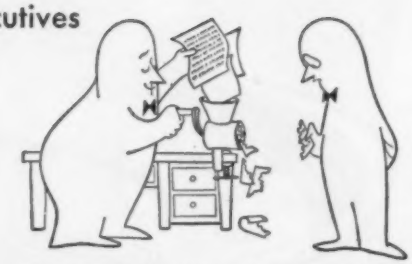
...a gallery of unchanging executives



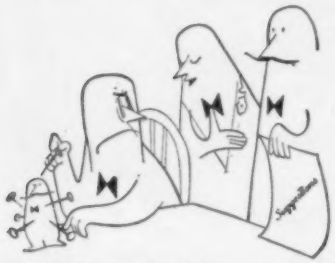
Sharpshooter. Fastest gun in the firm, he can riddle any suggestion for change before the ink dries.



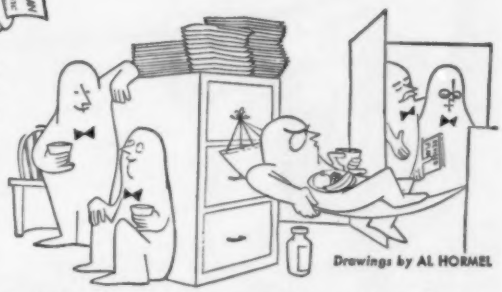
Rock of Gibraltar. No one knows as well as he that the old ways are still the best ways.



Free translator. He is flexibility itself—with other people's ideas, that is. But after all, change is change, n'est-ce-pas?



Nemesis. Good idea? It came from that vice president who's been his rival for years—enough reason to veto it.



Drawings by AL HORMEL

Comfort lover. Even if his operations are inefficient, is that any reason to disrupt a smoothly running department?

Doing Battle with the Status Quo

THE CHANGE-PROOF executive may be a figure of fun. But the fact that he is food for the cartoonist only increases the seriousness of the situation. After all, do not most managers like to picture themselves as dynamic, alert, progressive?

According to Dr. Ben Miller of St. John's University this image may be more fantasy than reality. Many companies come up against difficulties in making major changes—and these difficulties are directly caused by the action or inaction of top or line management. If "plus ça change, plus c'est la même chose," how can managers become leaders of change?

• **No rule**—Of course, some people's resistance to change is understandable. An executive whose job is threatened by a new measure, for instance, will inevitably oppose it. Such cases are never easily handled, and no rule can be laid down as to how to deal with them.

But there are other forms of resistance that are more common—the kind of attitudes satirized in the cartoons. People like this automatically resist any kind of change, or at least try to prevent its introduction into their corner of the organization. Yet although they are deep-seated attitudes, Dr. Miller, writing in *The Management Review* for April, suggests that companies can do something about them, chiefly through better communications.

• **Range** — These attitudes to change are well-known. They range from the completely negative view to one of blind acceptance of everything that comes from the managing director (which can be just as damaging); from the apathetic "I just work here" attitude to the authoritarian approach of the senior executive who learns about a fancy new machine and rides roughshod over everyone in his determination to have it installed, no matter how uneconomic it might be.

What can be done about all this? Here are some practical suggestions from Dr. Miller:

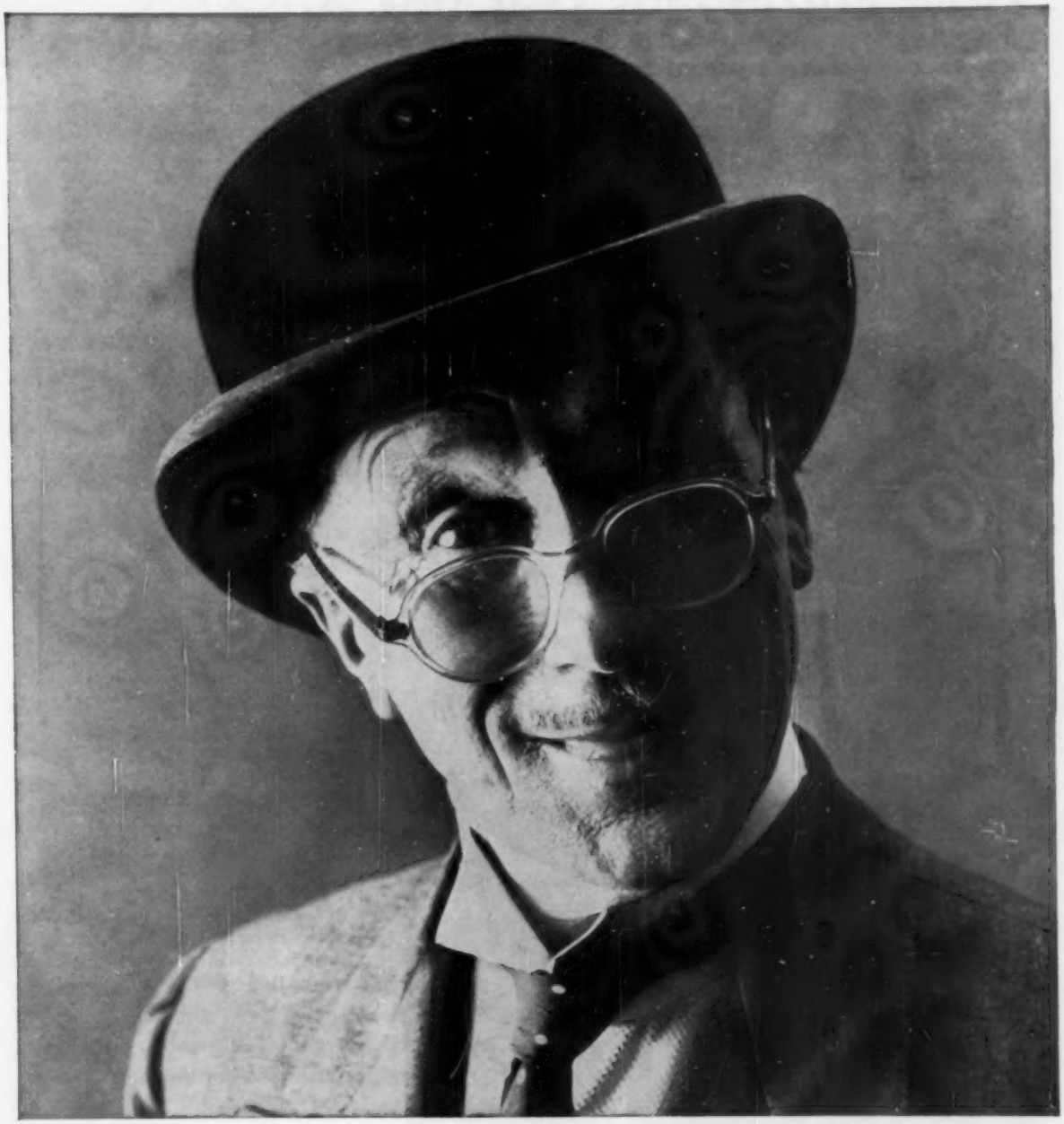
—Explain when hiring a new manager that one of the criteria used to judge his performance will be his skill in handling changes.

—Offer managers the chance to help plan and carry out new measures. This can be an important incentive, at least as effective as the usual financial incentives.

—Make it clear that your company favors change (when this is necessary for growth), and why. Draw up a complete review of company goals and the reasons behind them. This will make it easier to clarify each man's role in fulfilling these aims.

—Emphasize, in a policy declaration, top management's intention of reducing the possibility of unilateral executive decisions. Explain how changes are to be planned and directed and how managers are to participate.

—Include the subject of handling changes in whatever program exists for management training. Let managers know and profit from the company's experience with changes. ●



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How Europeans Get the Answers

"Is our return on capital satisfactory?"
"Is our profit on sales enough?"
"Is our stock turnover adequate?"
"Are our operating procedures efficient?"

TO GET ANSWERS to vital questions such as the ones above, management can compare the company's performance against past performance or against some sort of arbitrary standard. But useful as that can be, it leaves unanswered how company performance compares with other companies in the same industry.

How can management obtain competitive measures to judge its performance? In Europe, a simple and effective method is catching on: interfirm comparisons.

Interest in company comparisons has been sharply increased by the Common Market. Businessmen are worried about more competition across national boundaries. And as one result of their enquiries, the productivity agencies of the six EEC nations are now preparing to carry out comparative studies on an international scale. Other nations may join this program.

Dozens of industry associations, universities, and government agencies now conduct interfirm comparisons. The British Institute of Management (BIM) operates a Centre for Interfirm Comparisons. In Nuremberg, also, there is an Institut fuer Betriebsvergleich (roughly translated, Institute for Interfirm Comparisons). In The Netherlands, the work is done by the government's Industrial Statistics Division; in France, by the Centre d'Etudes et de Recherches Economiques, Statistiques, et Comptables.

Comparisons carried out by these intermediaries are confidential in that participating companies are identified by code. A company can compare its own figures to the other companies, but it does not know which figures belong to which competitor.

• **Management Problems**—Some agencies confine their interest to the problems of top management. Britain's BIM Centre is a leading example.

According to the Centre's Director, H. Ingham, the goal is to provide management with danger signals that point to major weaknesses within the company. Ingham says that comparisons show companies "where, in what way and to what extent they fall short of the achievements of other similar firms in their industry."

The Centre now conducts quarterly or annual comparisons in 15 industries, with about 20 companies participating in each. In these studies, Ingham makes use of operating ratios—the "pyramid" technique of analyzing a business. Ratios have the added advantage of providing information on sales, assets, etc., without giving any indication of size.

When these ratios are outlined on a diagram, the result is a four-step pyramid. At the apex is the primary ratio of return on capital: operating profit/assets employed. Then on successive levels you have what Ingham calls "supporting" ratios, "general explanatory" ratios, and "specific explanatory" ratios.

• **Reasons Why**—Starting at the top, a comparatively low return on capital can be caused by either of two major reasons. So the second stage of the pyramid is composed of two ratios:

Profit/Sales
Sales/Assets Employed

These ratios form opposite sides of the pyramid (when multiplied together, they reproduce the return-on-capital figure). Depending on which ratio is at fault, management's attention is focused either on turnover of assets, or profit on sales.

The third stage carries the analy-

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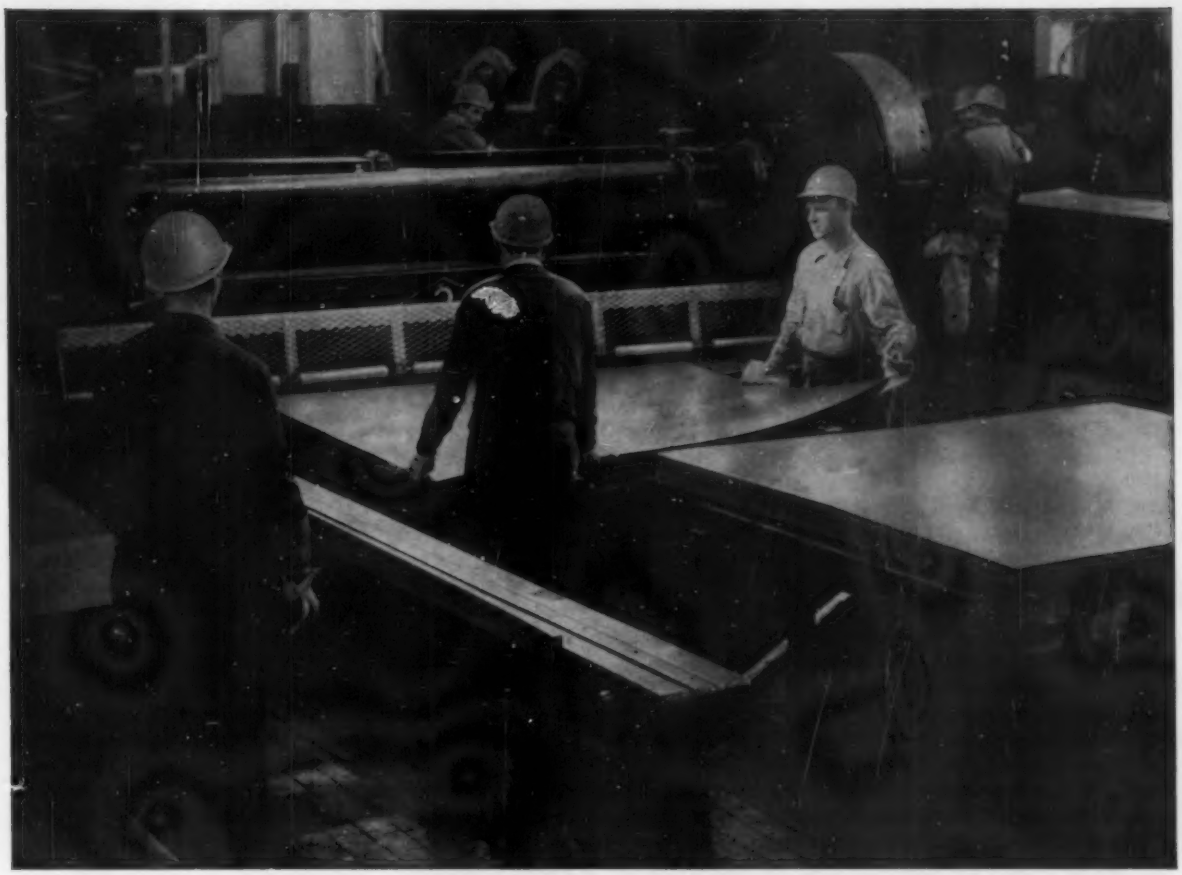

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sis one step further. On each side of the pyramid, the ratios suggest in which department or operation costs are high. For the profit-on-sales side, the ratios relate to the costs of production, research and development, marketing. For the turnover side, the ratios pertain to cash flow and the use of fixed assets.

The fourth stage analyzes operational specifics at the departmental level. Since the BIM is concerned only with the problems of top management, its surveys stop at the third stage, at least when large firms are involved. When small firms are involved, the BIM often explores the fourth stage. The top manager in small firms usually concerns himself with departmental matters, of course.

A "fourth stage" survey is in the nature of a technical study, of the sort usually conducted by industry research groups. But the BIM still relates technical matters to management's interest, such as at what point cash flow is being retarded.

• **Results**—European management in general is reluctant to talk about the results of interfirm comparisons. Some typical reactions, involving a number of European agencies, have been collected by the BIM's Ingham. Tangible results are more likely to follow technical surveys than studies of management problems.

A Swiss food wholesaler who participated in a survey by the Federal Technical University, Zurich, reported: "We allowed our customers 59 days' credit and were convinced that if we tried to reduce this period they would place their orders elsewhere. After taking part in an interfirm comparison, we discovered that the average credit period granted by firms in our industry was 49 days. By establishing closer relations with our customers and by streamlining our debt-collection department, we succeeded within a year in reducing our credit period from 59 to 47 days."

After a comparison of textile mills, made by the same University, company officials discovered that the mill's equipment was idle more often than other mills in the survey: "As a result," a mill manager commented, "we introduced a new reporting system by which the foreman had to record idle hours by causes." Within a year, the mill had reduced its "machine downtime" by 25%.

A Bavarian porcelain factory discovered it had the most inefficient capsules department of all the companies in a study conducted by Nuremberg's Institut. By analyzing the cost figures, this company adopted production methods that saved DM 35,000 (about $85,000).

After a comparison of 13 Belgian foundries, conducted by the University of Louvain, the Director of Fonderie Dument-Wautier reported: "We thought the most important section in which productivity could be increased was the finishing department, where more had to be put in than elsewhere. On the other hand, we never thought the moulding department stood in greatest need of improvement. When we got the report . . . we found that exactly the opposite was true."

Probably the greatest contribution of comparisons is to shake management out of its complacency. The "best" firms are seldom best at everything. ●

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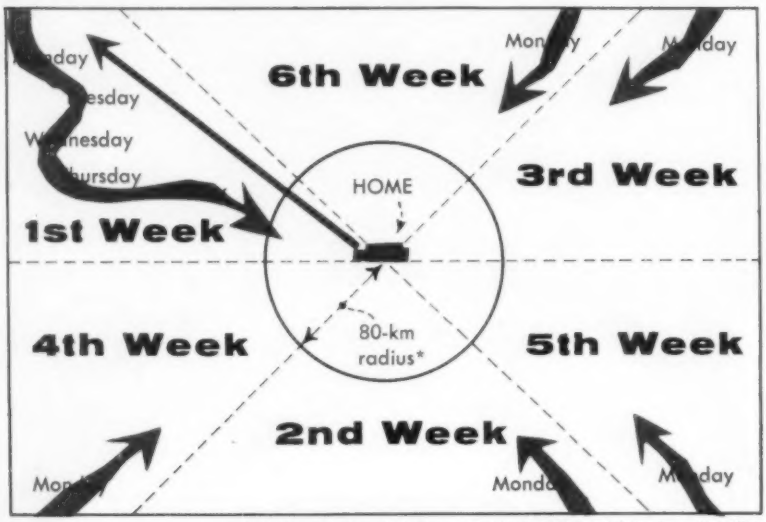
SHELL

Three Problems for Sales Managers



* Salesman stays in hotels outside this 80-km "drive-home" radius

1. Covering a Big Territory

THE "ROTATION SYSTEM" above was devised as a way to get regular, systematic coverage of a sprawling territory. By adopting the system, a sales manager of the U.S.A.'s James Manufacturing Co. reduced the travel time of his salesmen and increased their sales calls.

The James company sells farm equipment. And dairy-equipment sales manager William Stenquist told *Sales Management* magazine, "In a depression-prone industry such as we serve, we have to reach more and more prospects if we are to move ahead." He could have been speaking for equipment-suppliers throughout the world—especially those in cyclical industries.

• **How To Do It**—To set up a rotation schedule, Stenquist first defines the salesman's territory. This is done with standard highway maps, paying close attention to highways, trade centers, distances. Depending on the size of the territory, Stenquist decides how many weeks are needed to cover it. Segments are blocked off to represent each week's and each day's work.

Excepting a few "choice" territories, the minimum sales-call cycle is four weeks, the maximum is eight weeks. The six-week schedule above is a typical assignment.

With the general plan of attack worked out, the salesman is asked to plot his sales calls. For each segment of the map, he marks all farm-equipment dealers (including competitive dealers and potential James dealers), large dairies, milk plants, milk transport firms, institutions, etc.

• **Not Slaves**—Salesmen are not slaves to the formal schedule that is worked out. But they are expected to plan their work three weeks in advance, including stopover points beyond the 80-km circle surrounding headquarters which Stenquist defines as the drive-home range. Within each segment, the salesmen are expected to travel directly to the outer area and then work their way home.

At times, salesmen may have to make rush calls into an adjacent section. But if a salesman misses his normal calls, he does not return to his point of departure. Suppose he misses his Friday's calls in the 1st Week section: On Monday he would shift to the 2nd Week section as scheduled. And he would try to make up his lost calls with short forays on Saturday or late in the afternoon. Stenquist told *Sales Management* that altering the schedule might lead to random calls, and this would defeat the system.

Salesmen are instructed to visit dealers during the morning, when they are fresh. In the afternoon they make calls of a secondary importance, such as isolated farms and educational leaders, and follow-up calls on dealers.

• **Quotas**—Each salesman is encouraged to project the sales potential for each territory section, and for each equipment line. As a general guide, the James company expects each salesman to bring in a minimum annual volume of $150,000. Based on 233 working days, this means a daily volume of $644, and based on four calls a day, $161 per call. The 233 working days takes into account weekends, holidays, and sales meetings. But it does not allow for bad weather, car repairs, sick time, dealer "open houses," agricultural fairs, demonstrations.

The average salesman makes about 675 dealer visits a year, plus about 250 visits to farmers, educational leaders, etc. To make these calls, the average salesman travels about 48,000 km per year.

2. Specializing

SHOULD SALESMEN be market-oriented or product-oriented? This presents a dilemma for many sales managers, especially in companies selling industrial products. How companies in one industry are handling this problem was recently reviewed by McGraw-Hill's *Chemical Week* magazine (May 6, p65).

Salesmen specializing in specific markets—say the steel industry, or agriculture—are today clearly outnumbered by product-oriented salesmen. The trend, however, is toward specialization. The reasoning is that the best way to reach customers in a particular field is with an expert trained in that field. Besides selling more and giving better service, the specialist is likely to send higher quality information to headquarters, allowing the manufacturer to keep in closer touch with customer trends and needs.

But whether a given company should specialize or not depends on both its products and its markets. As a general rule, industry specialists are best used where end-uses of the product are limited, and where markets are fairly large. Where end-uses are many, and where markets are small, product specialists come into their own.

Pennsalt, Inc., illustrates this rule. Salesmen who sell general chemicals such as acids and amines are product specialists; salesmen selling dry cleaning chemicals and metal-processing products are industry specialists.

• **When to Shift**—Often the question is not "either-or," but rather when to shift toward specialization. Pittsburgh Chemical Co. watched the growth of its specific markets for protective coatings for several years. When its sales problem became too unwieldy for a product-oriented staff, Pittsburgh shifted.

The company split its coatings division into two specialized groups: industrial coatings and pipeline coatings. Within the industrial group, there are industry managers for marine applications, iron and steel, chemical processing, pulp and paper.

"We cannot say yet how this shift has affected sales," Pittsburgh's William McLaughlin told *Chemical Week*, "but market specialization does appear to be more efficient."

• **Test Basis**—If possible, it is a good idea to test specialization. Monsanto Chemical Co. decided that industry specialists might be the answer to its problems. The company was worried about the effects of growing competition, increasingly complex markets, and its own highly specialized products.

Checking the sale of organic chemicals in the New York area, the company found that the majority of its big customers were within 54 km of Manhattan. Assured of an adequate market in a relatively easy-to-cover territory, Monsanto assigned salesmen to cover specific industries: plastics, drugs, paint, rubber, and petroleum, plus a miscellaneous category.

The result was not only a greater sales volume but also more sales per call. Monsanto has now made the shift in all markets that can

PROFITS TAKE A BOW

Bowing is so deep-rooted a form of greeting in Japan that a businessman may find himself bowing during a telephone conversation.

An increasing stream of buyers is being greeted at Mitsubishi Shoji these days. This is because word is getting around of the high profits in trade with Japan. The quality products of this country's industry are finding wider and wider markets.

Many of these products carry the Three Diamonds mark of Mitsubishi companies. There are over a score of them in light and heavy industries, each handling foreign trade transactions through Mitsubishi Shoji, their big general-trading representative.

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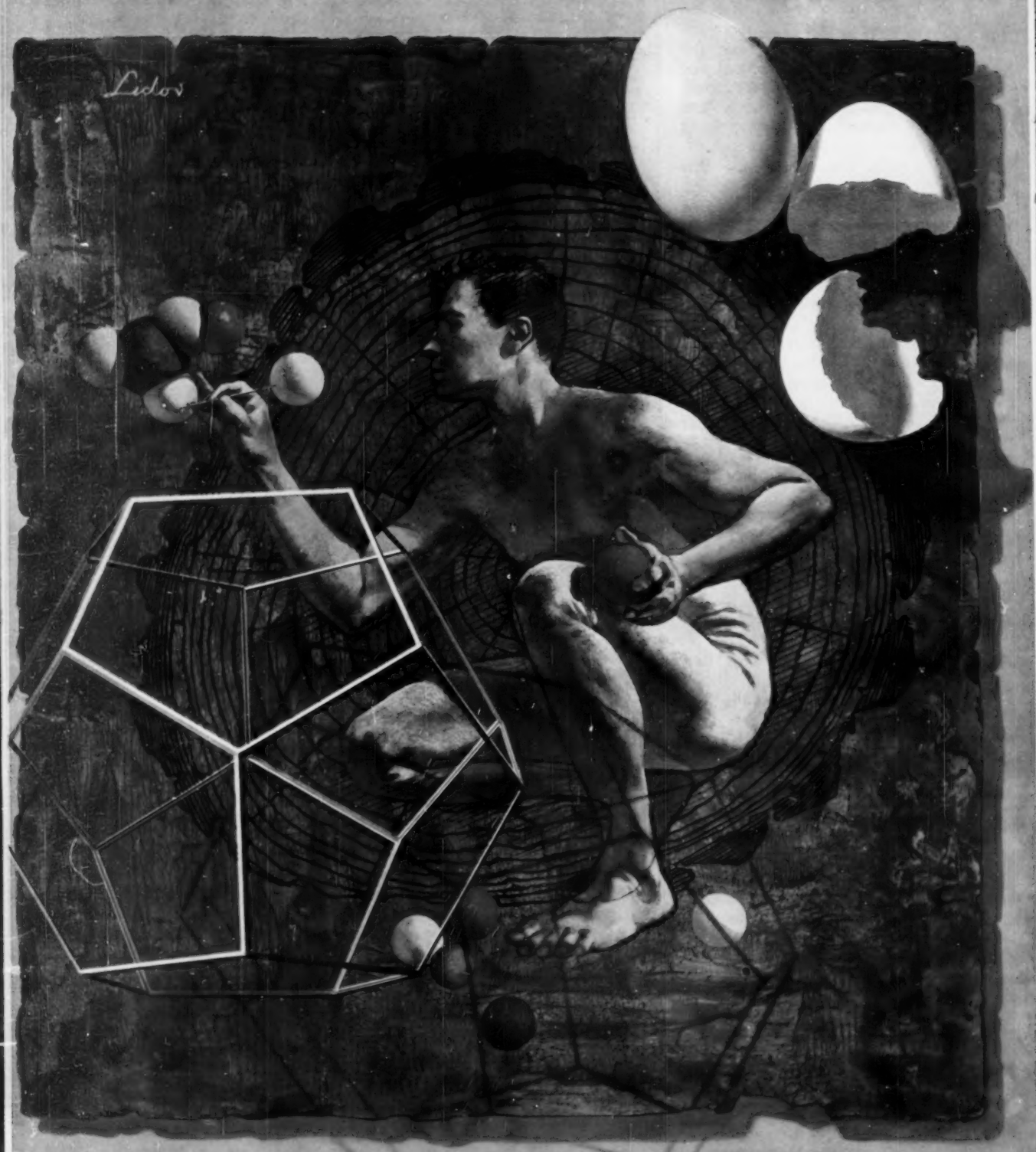


Probing the secrets of the atom is the endless preoccupation of the chemist. His discoveries affect the lives and fortunes of people around the world. Whether it be something as simple as a bleach or as complex as a new process for separating fuel oils, Dow chemists are constantly contributing new chemical products that help industry to operate more effectively and the consumer to live more enjoyably.

DOW

support the specialized salesman.

• **Staff Solution**—Some of the benefits of specialization can be obtained with staff experts. Kaiser Aluminum sends its salesmen to call on all types of customers. Backing them up are staff managers whose duty is to keep up with the sales needs in broad market classifications.

The chemicals division of Armour & Co. recently divided one sales department into two subdivisions (and found the change required a 15% increase in sales manpower). Line salesmen specialize to the extent that they do not overlap each other's markets. But they depend on staff experts for advice on specific industries.

The Heyden Newport Corp., another company that backs up product-oriented salesmen with industry specialists, points out a problem: the risk of conflict between the staff specialists and the line salesman. The salesman may even resent the specialist as an "intruder" into his territory. To avoid this, Heyden requests its industry experts to make calls only with the salesmen—and never by themselves.

• **Drawbacks**—Many companies will find it impossible to specialize their sales efforts beyond the staff level. Market concentration is the big drawback. Specialization is uneconomical in most lightly-populated areas.

It is also difficult to concentrate on special markets if widely diversified product lines go to the same customer, if product end-uses are not specific, and if marketing areas are not easily defined. ●

3. The Trouble With Salesmen

ONE PROBLEM facing the sales manager, whether salesmen are officially market or product oriented, is that some salesmen will not know very much about the product they are selling or the market they are selling to. Better training, or better selection, may be the quickest and surest way of winning more sales.

Ignorance of product and market is one of the criticisms of salesmen that emerges from an internal survey by A. O. Smith & Co., a heavy equipment manufacturer. Sales Manager A. F. Smith asked 30 of the company's purchasing supervisors what they think about salesmen. The answers were sought for the company's own use in training its salesmen, but the survey aroused so much interest that Smith disclosed the results.

Here is what the purchasing men said about the thousands of salesmen they have watched in action:

Personality and habits. Three out of four salesmen waste time with "chit chat" and "small talk;" more than half talk too much; one in three lacks enthusiasm. And 10% call too often.

Approach. More than half of the salesmen who call on A. O. Smith lean too heavily on personal acquaintance. One in three tries to bypass purchasing people to get to engineers and production men, and almost as many try to bring influence or pressure to bear. About one in every seven salesmen seems to think he can "buy" a purchasing man with lunch.

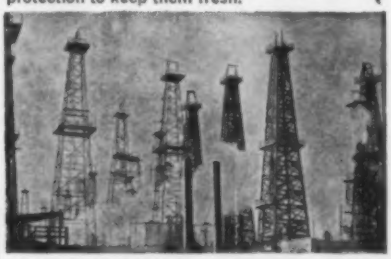
Sales presentation. Only one in four salesmen try to learn the problems and needs of the customer; only two in five even try to find out what these problems might be. Some do not know their own product. Many present an ineffective sales message; others merely take orders.

Follow-through. More than half fail to help with service, and more than one in four do not follow the status of orders or delivery after they get an order. Lack of this follow-up, comments Sales Manager Smith, has a "high irritation value."

Understanding of purchasing. When it comes to understanding the purchasing man's point of view, salesmen fall down badly. The purchasing man thinks in terms of "value analysis," which is research aimed at determining what component or product will best and most economically serve a specific need. Of the 30 buyers surveyed, 80% said that salesmen who visit them have little or no concept of the problem. And about 85% of the buyers thought that this is a deterrent to the salesman's success. ●

Chemical research, represented by the crystal, is the key that unlocks many of the world's mysteries. The eggs? Nature's "perfect package" symbolizes Dow leadership in packaging plastics. The many-ringed tree cross-section stands for the once-precarious occupation of agriculture, today becoming a predictable science through the increasing use of farm chemicals.

Saran Wrap*—strong, vaporproof packaging film—gives dairy products and other foods complete protection to keep them fresh.



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DOW

Everybody Is a "Discounter" Now

SELF-SERVICE LOW-MARKUP. The "discount house" above (Topps—in La Grange, Illinois, U.S.A.) has the look and atmosphere of a big supermarket. Now, more than ever, it represents the wave of the future in retailing.

What has happened in the U. S. A. is this: The "discount house" of five years ago, often a shabby, backstreet establishment, has cleaned up its aisles and developed a high style of its own. There is some truth in the statement "everyone is a discounter now."

Marking the trend, a new trade magazine appeared in America last month called *Discount Merchandiser*, put out by the Super Market Publishing Co. The magazine's editor, Nathaniel Schwartz, confidently predicts that the discount house will become as important in general merchandising as the supermarket has become in food.

Since the breakdown of the U. S. A.'s "fair trade" laws, "discounting" has lost its original meaning. But the man on the street pays less in low-markup stores, and "discount" is a good enough word for them. Elsewhere in the world, however, discount retailing retains its original meaning of selling goods below prices set by the manufacturer.

• **European Battle**—Discount houses are still fighting their battle with "fair trade" in Europe. See what is happening in France. The first independent discounter in Paris, appropriately called "Monsieur 20%," has been reduced to selling photographic film.

But discounting is far from dead in France. Discounters have made a counterattack by way of a complicated coupon system. Purchasing groups called Groupements D'Achat play the key role. They buy in volume. But instead of selling goods, they sell coupons which consumers can redeem at affiliated stores. There are 25 of these purchasing groups in Paris, three in Lyon, one each in Nice and Marseille.

For its services, the Groupement collects a rebate of 4% or so. And customers get discounts of 20% to 25% below list prices when they buy household goods, radio and television sets, clothing and furniture. On some types of goods, bought directly from affiliated manufacturers, the discounts go as high as 40% to 50%.

• **Self-Service**—The hallmark of the low-markup store is self-service. And self-service is spreading everywhere, if unevenly. At the opposite ends of Europe, for example, Norway has a self-service store for every 2,000 people, whereas Spain has one for every 200,000. Hardly a new suburb in the world is without its U. S.-style shopping center and supermarket; even small retailers in the cities are adopting the self-service principle.

Besides the lower prices, consumers like self-service stores because they can study and compare prices without being influenced by salesmen. Retailers are coming (sometimes reluctantly) to like them; because consumers like them; and because a big volume can be done with a small number of employees.

The Europeans are ahead of the Americans in one aspect of self-service. They have extended the principle to wholesale outlets. Möller & Co., a Stockholm wholesale grocer, opened the first cash-and-carry outlet in 1956. Now Möller has four units that sell about 4,000 articles, serve 1,500 customers, and account for about half of the company's total business.

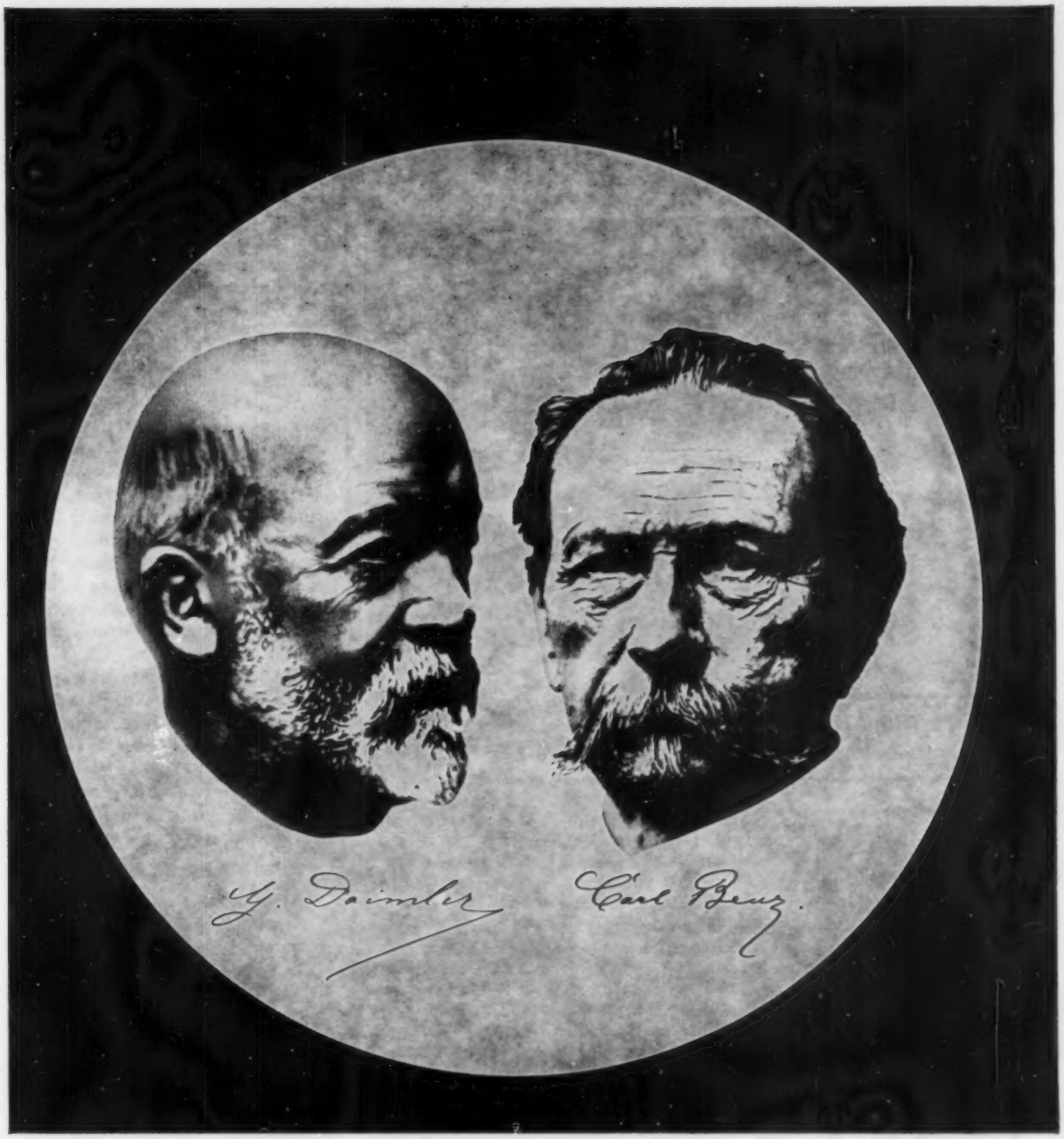
The idea has been taken up in other nations as well, and there are now a hundred or so self-service wholesale outlets in Northern Europe. Some of these outlets sell goods other than groceries, such as cosmetics and craftsmen's supplies.

These discount wholesalers usually sell for about 4% to 5% below standard wholesale prices. Considering that the usual discount on quantity purchases is about 3%, the small retailer can actually gain a slight advantage over his bigger competitor by foregoing delivery and credit services.

• **Mass Retailing**—This wholesale discounting is of considerable interest, but it is not of major importance. The basic trend today—represented by self-service and low-markups—is toward mass retailing.

The essential ingredient is a supply of more-or-less standard, reliable, mass-produced products. Discounting thrives on household appliances, radio and television sets, sporting goods, toys. And the list continues to expand: watches, drug products, cameras, perhaps some day even automobiles.

U.S. proponents of mass retailing claim that population trends (see "Business at a Glance" on another page in this issue) favor the discount house. The age distribution is bulging at both ends—the young, the old—and this will put an increasing burden on income earners to stretch their dollars. For retailers, the answer seems to be a fast turnover, with profits



In July 1886 Karl Benz introduced his first fully roadworthy motor carriage. In the same year the first motor vehicle built by Gottlieb Daimler made its debut. This twin birth of the world's first motor-cars opened up the era of motor-propelled transport. Today, 75 years later, with more than 100 million cars and 26 million trucks plying the world's highways, Daimler-Benz adhere to the same progressive principles and ideals which inspired these two great inventors.

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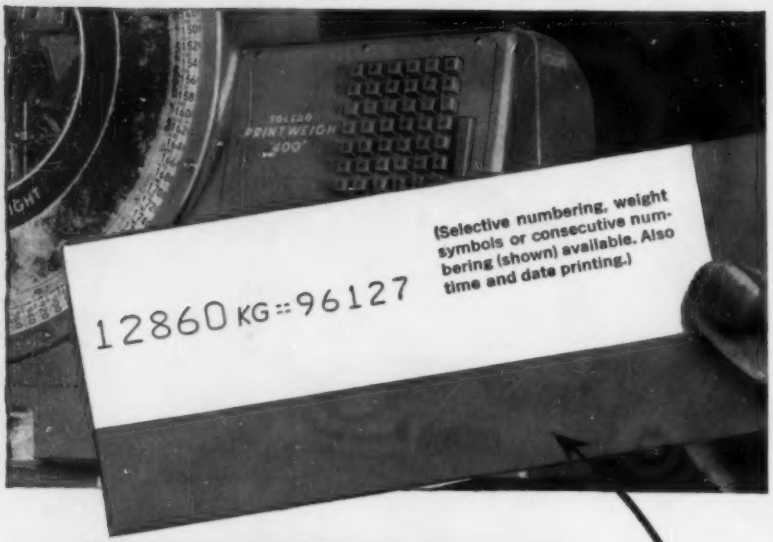
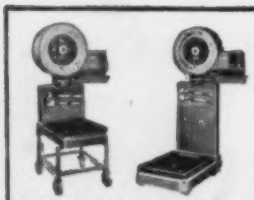

12860 KG = 96127
(Selective numbering, weight symbols or consecutive numbering (shown) available. Also time and date printing.)

. . . *THE ANSWER* to prevent "guesswork" and errors in cost control!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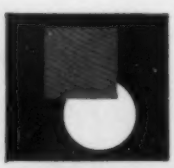

SERVICE

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coming from their big volume.

The chief attraction of the discount house is, of course, price. But discounters also try to attract customers with lots of parking space and long shopping hours. One chain now stays open from 10 a.m. to 10 p.m., seven days a week. The discounters' aim is to establish informal, "friendly" stores where the whole family can shop in the spirit of a picnic.

• **Debate**—Within the discounting business, there is a difference of opinion concerning the merits of "leased" versus owned operations. Many retailers believe in turning specialty departments over to outside specialists—the shoe department, for instance, would be operated by a shoe company, which would pay part of its profits to the store owner. This method brings together skilled merchants in a hurry, and requires less capital. Other retailers feel that operating all departments makes for sounder merchandising.

The U.S. discounter's greatest worry, according to *Business Week*, is that the field is becoming saturated. Within a decade, it is likely that discount houses will have evolved into two strong types: the stripped-down store and the high-service luxury store. Outlets in the middle will be the ones with problems.

All the same, discount houses will be doing a tremendous volume of business over the next few years. They already enjoy the advantages of bigness: the ability to pay high salaries, to buy in big quantities, to "create" merchandise, to buy on specification.

• **Countertrend**—These are advantages that are also enjoyed, to some extent, by "old-fashioned" stores, at least in the big cities. And there are a substantial number of people who do not care about self-service, to whom a small price saving is secondary to quality, service, dignity, and the social assurance offered by the traditional "downtown" store.

Indeed, one New York merchandising authority, E. B. Weiss, admittedly swimming against the current, predicts an imminent revolt against self-service. He foresees an upsurge in telephone and mail orders and door-to-door selling. ●

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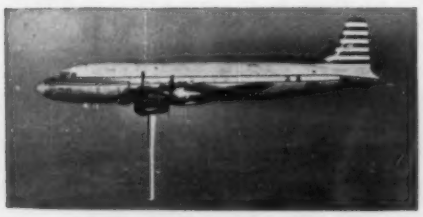


A telecasting airplane now takes its place with these new teaching machines

. . . a Rheem data-recall unit . . .

. . . a Dictalab in which

Educators Turn to Machines

AN AIRPLANE began flying in tight circles over midwestern U.S.A. a month ago. Its purpose: to transmit television lessons in algebra, history, grammar, and other subjects to public school classrooms in a six-state area below.

At about the same time 28 high-school students filed into a "language laboratory" classroom in a suburb of New York. They sat down at individual sound-proofed booths, put on telephone head-sets, and then began learning first-year French by talking back to a tape recorder.

In other parts of the U.S., aircraft workers were learning parts assembly by slides and tape recordings; and Air Force trainees were being instructed, quizzed, graded—and even complimented for their progress—by electronic teaching machines.

• **Automation** — These examples, and others like them, point up the fact that automation is slowly edging into the classroom—in colleges, high schools, grade schools, and as part of large-scale industrial and governmental training programs.

Indeed, a new industry is appearing. Wall Street investors have already bid up the shares of some of the 30-odd American companies making and marketing electronic teaching aids. Schools, industry, and government in the U.S. will this year spend an estimated $100-million on teaching devices.

Meanwhile, electronic instruction is gaining more proponents in Europe; and a United Nations team is studying the possibility of using teaching machines in the battle against illiteracy in the developing nations. One distinguished American student of world manpower recently said, of one of the new nations of West Africa: "Here may be the most promising place for applying some of the breakthroughs in education technology — rather than in the U.S.A. where we tend to turn up our noses at teaching by TV and the like!"

As the professor implies, mechanized teaching is the subject of lively controversy. Many educators are horrified by the thought of an electronic gadget moving in next to the classroom bust of Cicero. But because of the demands of the times for educated manpower, even the most skeptical educator and businessman begins to show interest in the teaching machine.

I. The Demand

Automation is aimed at efficiency. Its introduction into the classroom was inevitable. Teaching machines promise to make more instruction available to more people, faster, in more concentrated doses. It allows the very best teachers, a scarce commodity indeed, to reach many more minds.

Education is the most sought-after commodity in the world today. Nowhere is it in ample supply. It is a growing problem for industrialized Europe, the U.S., Japan, just as it is in industrializing Latin America and Asia, and in awakening Africa.

Note the massive Communist Chinese efforts to reduce illiteracy. Or the recent decree of Brazilian President Quadros (IM—June,p4), placing more responsibility on private business for the schooling of workers and their families.

• **Industrial Training**—It is not merely a matter of primary education. The swift changes in technology have immensely complicated the training problems of industry and government. In years past, a company could take an engineer from the university, give him a tour of the plant, hand him some pamphlets, and put him to work.

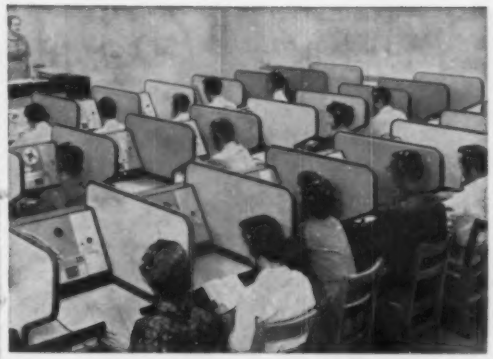
Now, private corporations and government agencies must spend millions to train not only engineers, but managers, salesmen, factory and office hands. The increasing complexity of product and market—in electronics, astronautics, nucleonics, petrochemistry, to name a few—make lengthy training essential. One electronics company is said to spend more on education than the city of Boston, U.S.A.

II. Machines of Many Kinds

A wide variety of equipment is involved, as well as some new ideas on teaching. There are the familiar tape and disk recorders, motion pictures, slide projectors, microfilm. Closed-circuit television is playing a growing role, and so is open-circuit special-programmed television.

The plane circling over midwestern U.S. is operating experimentally now, but next autumn it will offer complete elementary and high-school courses with full credit.

High-school students are expected to have no other instruction in the subjects televised. They will watch the telecasts in large groups, then break up into smaller discussion



recording tape teaches languages . . . desk model of an AutoTutor.

and a New Method

groups, later take tests. The program is sponsored by several companies and non-profit foundations, but it is hoped that the cost will eventually be borne by the schools using the televised instruction.

• **Listen and Talk** — Mechanized language laboratories, pioneered by the military, are becoming fairly common in U. S. colleges. Now they are being set up in high schools.

Students listen over earphones to experts giving lessons and exercises in a foreign language. They repeat phrases and answer questions into a microphone. Quarter-track recording tape is used, which allows space for an expert's voice and a student's voice when the tape is running in either direction. The student is able to play back the tape to compare his pronunciation with that of the teacher.

"The beauty of the system is that each student, in essence, has his own individual tutor," explains an executive of Dictaphone Corp., originators of Dictalab language laboratories. "The shy student will speak up to the microphone, when he might not in the classroom. He talks more, he listens more, he moves ahead faster."

• **Electronic Monsters** — Television and tape-recorders are relatively simple compared to some devices that are just now being tried out in classrooms and training centers. Take the electronic AutoTutor designed by Western Design Div. of U. S. Industries Inc. Eighteen have been put to use by the U. S. Air Force, at a cost of $5,000 each.

A learner sits in front of a console, looks at projections on an individual screen, then answers questions by pressing buttons. If he presses one button, the machine may flash this message: "You are correct. Good deduction." If he presses another, he might get this: "Not correct. Note these facts . . . Now go back to Image No. 1, read carefully, and try again."

The AutoTutor is sophisticated—and expensive. (A new desk model, shown above, sells for $1,000.) But there are also scores of simpler self-instruction machines, devices that use filmstrips, slides with recording tape, partially masked sheets of paper, paper rolls, index cards, and cardboard disks and wheels.

III. How They Work

Teaching devices of one kind or another have been around for many years. But those of the past were instructors' aids rather than self-instruction machines. They were teacher-centered, not learner-centered.

The new teaching machines permit an interaction between the learner and the machine. They offer three big advantages over their predecessors: (1) a means by which the student can respond; (2) immediate correction or evaluation of these responses; (3) pacing of the lesson in accordance with the student's progress.

• **Step by Step**—Actually, what is being offered is a mechanical tutor rather than a teaching device. The machines are programmed to take a student step by step through a subject without the aid of a teacher.

The machines are of many sizes and shapes, but they follow a similar pattern in what they do. With a student seated before it, the machine presents data and then problems and questions. This material can be presented on any medium: slides, movie projections, rolled paper, tape recordings. The learner then responds to the questions by pressing a button (multiple choice) or by writing his answer on a special section of paper (constructed response).

The machine immediately indicates if the answer is correct. If it is not correct, the learner may be told why or merely given another alternative. If he answers correctly, the machine continues with the next lesson, sometimes with a verbal pat on the back for the student.

• **Pioneers**—Development of the first machines of this kind usually is credited to the independent efforts of two U. S. psychologists, Sidney L. Pressey and B. F. Skinner. Pressey, now professor emeritus at Ohio State University, reported in 1926 on work he was doing with a multiple-choice, punchboard teaching device. But at that time there was less public pressure for accelerated education, and Pressey's device went almost unnoticed.

The present interest in teaching machines began in 1954, when Harvard professor B. F. Skinner published a paper titled "The Science of Learning and the Art of Teaching." Skinner told about a teaching device he had been working with that, in contrast with Pressey's, required a "constructed response" rather than a multiple-choice selection. The learner had to write his response on a specially designated square of paper. Then the machine provided the correct answer, and the learner compared his response with the proper answer.

In this system, a correct response was immediately reinforced: The student knew he was right. An incorrect response sent him in search of a better answer.

IV. Programmed Learning

Both Pressey and Skinner saw their work in self-instruction as a new method as well as a mechanism. A heated controversy has grown up recently between those who stress the value of the machines in use and those who stress the method

This is where Progress comes from
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It starts with a raindrop, a clear mountain spring, a tumbling stream ..... Massive man-made barriers harnessing the oppressive weight of imprisoned waters to hurl a roaring torrent against the flying vanes of a waterwheel in its savage drive to escape ..... While the eternally patient process of evaporation lifts water back into the skies to form more cloudfuls of progress the waterwheels, their turbines and generators continue their never-tiring service sending a steady flow of electric power across the land into factories, streets, hospitals, schools, homes.
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Samples in Programmed Learning

HOW IT'S DONE: A learner studies the statement in one frame, fills in the blank, then turns the page and finds the correct answer in the left margin of the next page. To the right of the answer he finds the next question and blank space.

PAGE 1	
	Animals are trained with "rewards". The behavior of a hungry animal can be "rewarded" with _____. 7–1
reinforced (NOT: rewarded) 7–3	The trainer reinforces the animal by giving it food_____ it has performed correctly. 7–4
after 7–6	Unlike a stimulus in a reflex, a reinforcing stimulus_____ act to elicit the response it reinforces. 7–7
PAGE 2	
food 7–1	A technical term for "reward" is reinforcement. To reward an organism with food is to _____ it with food. 7–2
when (if, after) 7–4	Reinforcement and behavior occur in the temporal order: (1) _____, (2) _____. 7–5
does not (will not) 7–7	A reinforcement elicits no response; it makes it_____ that an animal will respond in the same way again. 7–8
PAGE 3	
reinforce 7–2	Technically speaking, a thirsty organism can be _____ with water. 7–3
(1) behavior (2) reinforcement 7–5	Food given to an animal does not reinforce a response unless it is given almost immediately _____ the response. 7–6
probable (likely) 7–8	Food is probably not reinforcing if the animal is not _____. 7–9

Source: "The Analysis of Behavior: A Program of Self-Instruction," by B. F. Skinner and J. G. Holland, McGraw-Hill Pub. Co., New York.

—programmed learning—identified with machine use.

• **Shades of Pavlov**—What is programmed learning? In essence, it is a method of patiently "conditioning the behavior" of a learner, in much the same way that Ivan Pavlov last century conditioned Russian dogs to salivate at the sound of a bell. The learner is fed tiny bits of simple information. He actively responds, and correct responses are immediately reinforced (see examples above) with the "reward" of knowing he was right.

The essence of programmed learning is its simplicity, its one-small-step-at-a-time procedure, its repetition, its immediate reinforcing of correct answers. Skinner has been largely responsible for the philosophy behind the method, as he has for some of the machines used. But he has stayed out of the heat of the controversy as to the relative value of the method contrasted with the machines.

Many educators, though, strongly stress the value of the method rather than the machinery used. They have conducted extensive tests both with and without machines, and they say there is no noticeable difference. Students learn just as well from a programmed-learning text, they report, as from a teaching machine. Some educators, in fact, contemptuously refer to the machines as "merely mechanical page turners."

The 30 or more companies making and marketing the machines

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VALVES, DRIERS, STRAINERS, AND ACCESSORIES FOR REFRIGERATION, AIR-CONDITIONING, AND INDUSTRIAL APPLICATIONS

have a different story to tell. Some are prominent manufacturers in other fields—instruments, cameras, dictating machines—and others are small research groups.

• **Beat the Machine!**—They find that machines aid teaching in several respects. Machines control the instruction process, presenting one frame of a lesson at a time, so that a student is never tempted to skim through the entire lesson. Machines also keep a record of a student's performance, and they serve as a challenge—a student feels goaded on to "beat the machine."

Teaching machines also can be integrated with other devices—radio, television, filmed material. This has been the practice at many language laboratories: current material is fed into the machines and correlated with the taped lessons.

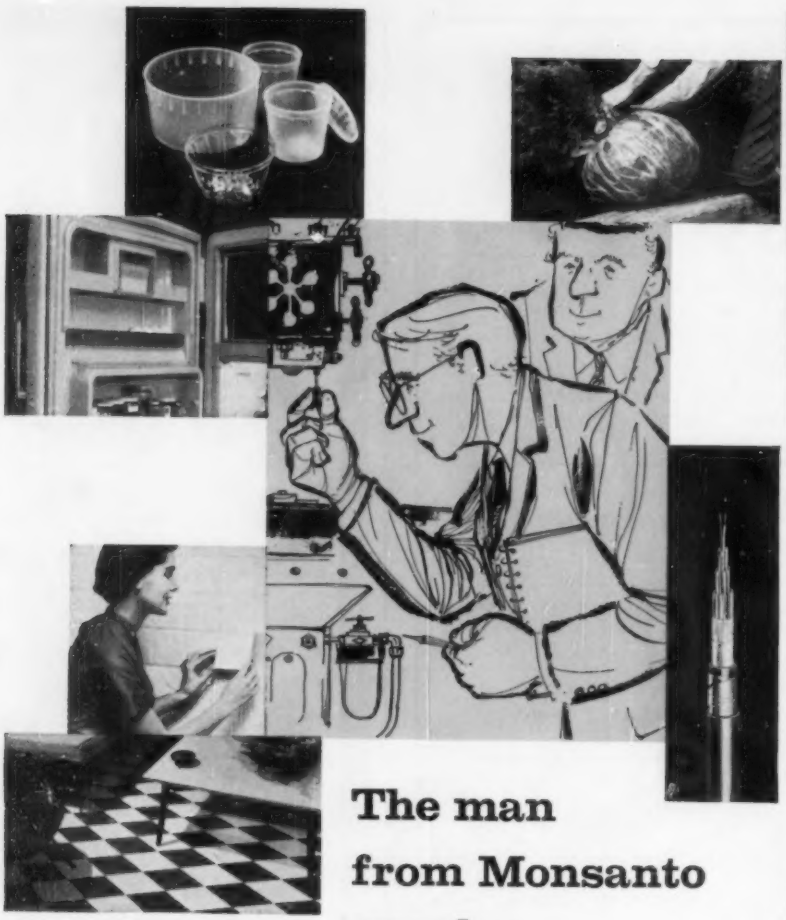
But teaching machines can prove disappointing to those who expect too much from them. They are mechanical devices, after all, and must be used properly as part of an overall educational program. Obviously, they can never take the place of a human teacher.

But, they have proven they can do a job. In months to come, teaching devices undoubtedly will be invading homes as they now are invading offices and classrooms.

Texts based on programmed learning also will be appearing. At least five U. S. publishers now are preparing texts on various subjects—algebra, psychology, contract bridge—using this technique. And scores of companies are studying the possible use of programmed texts for their training programs.

• **Outlook** — Professor Pressey sums up the outlook for teaching machines in a chapter of the new book *Teaching Machines and Programmed Learning*, edited by A. A. Lumsdaine and Robert Glaser (Nat. Educ. Assn., Washington):

"Machines are not going to make unnecessary either educative contact with reality, competence in reading, sociality . . . The teaching machine is no Frankenstein monster, threatening all present texts, materials, equipment, and methods, and even many teachers! Rather, automation should be the greatest help the schools have ever had. Only continuing cooperation between automators and educators is needed to make this so." ●



The man from Monsanto speaks fluent Plastics

Plastics are the most "willing" of basic materials. If one plastics formulation can't do the job, another can readily be made to. Monsanto has long been tailoring plastics to meet specific application requirements. The men from Monsanto can talk fluently about six major plastics families, subdivided into hundreds of precise formulations (there are 96 Lustrex* Styrene compounds alone!) They are travelling technicians, versed in plastics technology, experienced with local manufacturing needs, highly qualified to help with on-the-spot guidance all over the world. Discuss your plastics requirements with your local Monsanto representative, or write for additional information about Monsanto Plastics to Monsanto Chemical Company, Overseas Division, St. Louis 66, Missouri, U. S. A.

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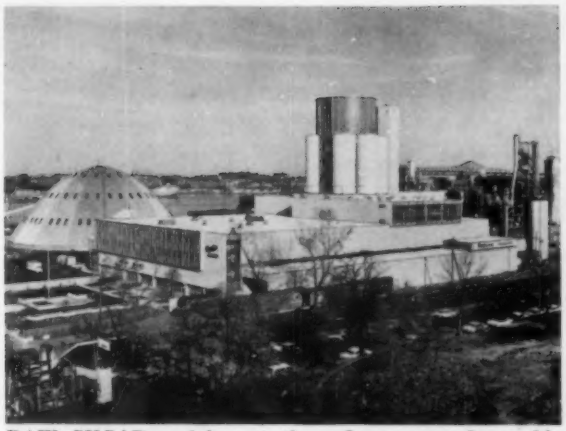
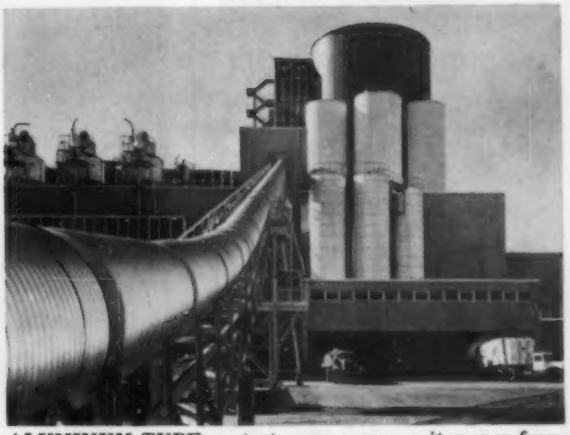
MONSANTO PLASTICS: Lustrex and Lustran* Styrene molding powders and latices; Opalon* Vinyl; Polyethylene; Resinox* Phenolic; Resimene* Melamine; Vuepak* Cellulose Acetate; Ultron* Vinyl film and sheeting; Saflex* Vinyl Butyral, and a broad range of Plasticizers. *Trademark Registered



RAW SUGAR arriving at the refinery goes from ship to scales and domed storage (left) by inclined conveyor.



ALUMINUM TUBE protects raw sugar as it moves from storage to the initial melting stage of the refining process.

Sugar Demands Less Handling

TURNING RAW SUGAR into the refined product normally takes a distressing amount of handling labor. Experts for several years have been saying that this doesn't have to be so: the remedy is better plant layout, and the use of especially tailored handling equipment.

How this is done can be seen in the new Boston refinery of the American Sugar Refining Co. (pictures). "In line, shape, and color, American Sugar's refinery resembles a city of the future," says *Factory* magazine, which judged the refinery one of its Top Ten U.S. Factories of 1961.

But the new cane sugar refinery is being honored for more than its good looks, reports *Factory*. Handling and processing are closely integrated in the new plant and almost fully automated from the time sugar arrives in the especially designed sugar ship Domino Crystal.

The Domino Crystal unloads itself by a system of booms and clamshell buckets. The sugar moves by inclined belt conveyor to the scale house, then by another system of conveyors to a dome-covered storage area. Sugar later is fed to the refinery's melting station as needed through an enclosed aluminum tube (picture, upper right).

• **Refinery's Brain**—One huge control room serves as the brain of the refining operation. Each step of the process is actuated, controlled, data-logged, and cross-checked on a comprehensive array of panels. Pumps and conveyors are accurately controlled as the sugar goes through a range of automatic processes, including melting, infiltration, decolorization, crystallization, drying, screening, and packaging.

Much of the output from the Boston refinery is in the form of dry bulk and liquid sugars, which are stored in a cluster of tanks and silos near the main building. Several tons of dry sugar go at a time to New England food manufacturers in an especially designed bulk truck. The truck even unloads automatically—by a blower system that lifts the sugar from the truck to customers' storage bins.

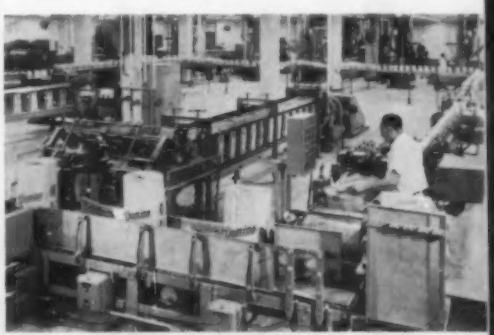
Sugar for household or institutional use moves into an equally efficient packaging station, where bags of various sizes are automatically filled and sealed. Automatic palletizers then stack bags, bundles, and cartons according to pre-set patterns. The system makes it possible to store many more millions of kilos of sugar.

The plant is by no means a "no hands" plant, *Factory* says, but it is saving American Sugar many dollars in direct labor costs. The men who operate the refinery are principally process people, maintenance men, sanitary crews.

Sanitation received a great deal of emphasis in the design and construction of the Boston refinery, and it continues to do so now that the plant is in operation. The use of tile walls and watertight electrical gear makes it possible to hose down most of the plant as standard practice. ●

AUTOMATIC control of most processing comes from this centralized room.

CENTRIFUGALS spin syrup off of sugar, load and unload automatically.



DRY SUGAR goes to bulk storage or to a smoothly run packaging station.

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EPOXY PELLETS, pre-shaped to fit a joint, go readily into automatic assembly.

Glues Now Are Components

FABRICATORS of a wide range of products and parts now are turning to solid pellets of epoxy adhesives, like those shown above, for their bonding jobs. The beauty of an adhesive pellet is that it can be placed exactly where it is needed in an assembly, and in the right amount.

Epoxy adhesives normally have three limitations when applied as liquids or pastes. They are hard to manipulate, hard to meter, and irritating to the skin.

• **No Residue**—Pellets, on the other hand, are handled like other solid components. They are 100% solid systems. This means all the adhesive is used when the pellet is melted in place. Unlike soldering or brazing, they leave no corrosive flux to clean away or gas to be driven off.

Here are some other advantages of an adhesive pellet:

—It can be preformed to fit into an automatic assembly line like any other part.

—It will join metal inserts to plastic molded parts, thereby avoiding expensive tooling for positioning these inserts.

—Different types of adhesive can be easily included in the same assembly.

As with conventional epoxy adhesives, pellets can be formulated to meet a wide variety of requirements. Here are some factors a shop must consider in turning to adhesive pellets:

1. Material to be bonded. Metals, glass, plastics, and ceramics can be bonded to themselves or each other by varying the resin and curing agent.

2. Temperature and time of cure. Pellets will set up quickly at high temperatures, slowly at lower temperatures. A typical bonding pellet that cures in 4 minutes at 250 C, for example, needs 24 hours to cure at 85 C.

3. Adhesive flow. The pellet, when melted, must be able to flow where needed, but no further. Viscosity can be varied.

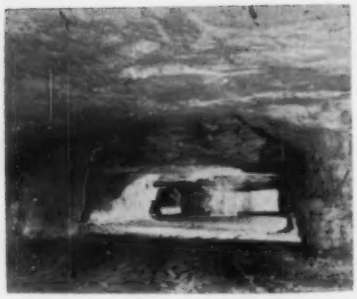
4. Pellet dimensions. The pellets normally retain their size and shape after curing. Pellet dimensions, therefore, are usually about those of the cavity being filled with adhesive.

5. Bond properties. Bond strength is high. The basis material, aside from metal, normally tears before the bond itself.

Adhesives in solid form also have two inherent disadvantages:

—The pellets are not tacky, so the adhesive in this form can not be used—as can tacky liquids or pastes—to hold parts in position until the adhesive hardens.

—Inserts bonded into deep holes tend to "float" out of position as the pre-shaped adhesive melts. This can be corrected by shaping the pellet as a tube around the insert, or by using a fixture for positive positioning. (*Product Engineering, May* 22, *p* 43)



Caves Become Factory Sites

ARCHITECTS are converting abandoned limestone quarries (picture) near Kansas City, U.S.A., into industrial villages. Besides their value as bomb shelters, the underground structures are: (1) cheap to develop, (2) essentially fireproof, (3) cool and dry.

One architect-builder, the J. G. Nichols Co., recently has developed and partitioned a 50,000-m² area for five tenants—including a toy manufacturer, a toolmaker, and a cooling-equipment company. All these tenants find advantages in the constant humidity and temperature —about 11 C—of the overall area.

• **Development**—The cave structure left after the end of quarrying operations looked like clumsy flat-slab framing. Wide pillars of limestone spaced about 8 meters apart supported the roof.

Before partitioning, Nichols engineers reinforced the cave roof with long expansion bolts driven perpendicularly or at an angle into the ceiling.

Walls enclosing each tenant's space are concrete block, built from the floor to the ceiling. Interior partitions are anchored to wood plugs driven into holes in the cave ceiling. Lighting fixtures and drop ceilings are suspended from expansion shields secured to the rock.

• **Air Conditioning**—A central boiler supplies hot water to coil heating units in each tenant area. Blowers in each area maintain desired temperatures ranging from 18 to 24 C.

Air forced through the undeveloped regions of the cave controls the humidity. Air pressure is maintained slightly above atmospheric to minimize drafts. (*Engineering News-Record, May* 18, *p* 58)

WORLD YALE & TOWNE REPORT

ANYWHERE IN THE WORLD YOU'LL FIND THE PRODUCTS OF YALE & TOWNE!

ST. NAZAIRE, France.—The busy docks at St. Nazaire in Brittany demand materials handling equipment that can work hard at top speed, stay on the job and move vast quantities and varieties of goods to help reduce ship turn-around time. This Yale 18,000 pound petrol lift truck, one of many Yale trucks working at this port, is rugged, highly maneuverable, has fast lifting and travel speeds, and maximum operator visibility in all directions.

LONDON, England.—Here, a Yale electric lift truck easily loads unwieldy structural steel tubing in unit loads onto a lorry for shipment to a construction site. This builder's merchant knows the value of using Yale trucks in moving his materials quickly, steadily and at less cost. Yale lift trucks are designed to give you long truck life, minimum down-time; efficient handling whether your loads are fragile as eggs . . . heavy as steel.

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Tiny and Massive Tools at Hanover Trade Fair

THE GERMAN INDUSTRIES FAIR at Hanover lived up to its advance publicity this year by being the largest and most varied show of its kind in Europe, if not in the whole world. Though 25 countries participated, the fair was largely a demonstration of West German industrial strength and trends.

West Germany's labor shortage was reflected in an emphasis on production rather than on research or innovations. And fair visitors were aware that most German exporters were passing the 5% mark revaluation on to their customers, despite the claim that raised prices were due largely to technical improvements. Prices on capital goods were up 3% to 5%.

Over 5,000 exhibitors displayed a collection of products ranging from tiny solid-state devices to massive industrial machines. Complete processing and material-handling installations were shown, as well as gadgets for industry, the home, and the laboratory.

• **For Industry**—A pneumatic boring unit, displayed by FMA Pokorny, of Frankfurt, is capable of gouging out holes of any length through almost any kind of soil. A plunger rams 470 times a minute against a solid-metal plug in the tapered end of the shell-like body, which requires no external support or guidance. Holes as large as 14 centimeters in diameter can be drilled.

Laroche Frères, of Paris, unveiled a Rotojet plastics extruder said to be the fastest injection machine in the world. The machine has a specially-designed transfer chamber which is fed continuously by the extruder mechanism to allow successive injections even in molds of different volume.

The Allgemeine Elektricitaets-Gesellschaft (AEG) booth had a power-driven screwdriver with automatic feed. A vibrating mechanism helps feed screws from a magazine into a slotted chute and then on to the driver head. A safety coupling prevents too much torque being applied to the screw.

• **For the Home**—A double-deck two-car garage was shown by Metallbau KG. of Vaihingen. One car is parked on a floor that slopes downward away from the garage door. A sheet-metal platform that slopes upward from the door then is put in place. The second car drives up the slope until its front wheels rest in a trough of the platform. The platform and second car can be raised by electric motor to let the first car out.

The Hamburg subsidiary of Philips introduced a new fully-transistorized tape recorder weighing less than 4 kilos with its six 1.5-volt batteries. With a speed of 4.75-cm/sec, the unit has an automatic governor and offers two hours of recording on a normal tape.

• **For the Laboratory**—Also from Philips Hamburg came a new transistorized TV camera. Primarily intended for closed-circuit industrial and technical applications, the camera weighs about 4.5 kilos and is fitted with an automatic shutter-speed mechanism.

Albert Seibert, of Wetzlar, displayed a midget photoflash unit called the Emolux—measuring about 6 by 3 cms—that fits all cameras and operates on a single long-life dry-cell battery. Tiny vacuum bulbs are automatically ejected as the reflector slides back into its case.

An ultrasonic instrument developed by Kretztechnik, of Zipf, Austria, measures the expansion and contraction of machinery parts. The time it takes for a sound impulse to travel through a part and back is accurately gaged.

And the dust content of gases is measured by an instrument of J. C. Eckardt, Stuttgart, that rotates a sample of the gas in an "exciter" tube. The dust gets an electrostatic charge that registers on an indicating or recording device.

Panel of light: General Electric Co. of the U.S. claims to have scored a "first" with this thin, square, fluorescent lamp, which replaces the usual long tube. Instead of just a point or a line, each unit gives off a surface of bright light—something the lighting industry has been trying to achieve for several years. About 30 cm square and 3.75 cm deep, the lamp has a snake-like trough inside it filled with mercury vapor. It can be operated at either 50 or 80 watts, has a life expectancy of around 7,500 hours. List price is $6.95.

Tool control: An automatic contour-control system that stops the machine before it makes a machining error has been developed by the British company, EMI Electronics Ltd. It is actually an angle safety unit which derives its control information from the built-in computer that controls the machine. However, the unit continually has access to the computer output before it is used to control the machine, and so can predict a fault and stop the machine before the machine follows the mistake. (*Product Engineering*)

Meal product for humans: Australian engineers have developed a new process and machine for treating protein materials such as animal meats and waste products, fish, whale, and cocoanut meat to produce meals and extracts fit for human consumption—at low cost. The process uses a solvent to extract water and fats in one operation. The finished product is obtained about half an hour after application of the raw material. The main

advantages are that the meal will keep indefinitely, and smell and taste are largely removed, but can be recovered as an extract concentrate provided the raw material is fresh. Forrestdale Enterprises Ltd. of Perth, Western Australia, is applying for patents.

Acrylic-based paints: Two new paints have come on the market in North America, both acrylic-based water emulsions. The first, a silicone-acrylic combination called Betonite, developed by Canadian Everguard Coatings Ltd., is said to form a waterproof "yet breathable" coating "on any building material." The second is a U. S. product brought out by DuPont and introduced as Lucite paint. It has a thick, thixotropic consistency that makes it virtually fool-proof for interior work.

Plywood produced continuously: Fiber-Ply panels, a product of Georgia Pacific Corp. in Portland, Oregon, U.S.A., are made by a new continuous process that lowers costs and promises new qualities. The panels have smooth, resin-impregnated outside layers that need no undercoat of paint, prevent checking, and minimize raised grain. In the 1-cm thickness the laminations are three of wood (fir), two of fiber. All other thicknesses up to 1.85 cm are 7-ply. Both exterior and interior grades of Fiber-Ply will be available, initially in conventional 1.22 x 2.44-meter sheets. Prices are as for conventional plywood.

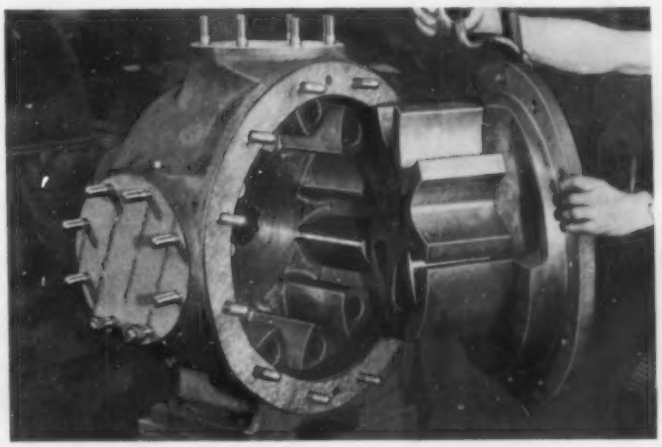
Low-cost tritium: Cheaper radioactive trace studies using relatively low-cost tritium is the promise from work done by an American chemist, Hilton A. Smith, of the University of Tennessee. At the recent International Atomic Energy Conference in Vienna Smith detailed a method of separating tritium from hydrogen by the use of gas chromatography. He suggests that tritium so made would cost $2/curie, and could replace carbon-14—at $9,500/curie—in radioactive tracing. (*Chemical Week*)

Neat as a new pin: Thanks to a new magnetic loading and packaging system, nails (or pins) need no longer be jumbled like macaroni but aligned as neatly as sardines in a can. The system makes unique use of electromagnetism to align and load the nails in less space, and packs the nails in a one-piece corrugated box, believed to be the first multiwall box to be set up automatically. Together, the board-saving cartons and new packaging technique reduce time and space in the factory, besides cutting costs. Several U.S. nail mills are installing the system to offset the competition of cheaper foreign-made nails. Manufacturers of the loading machine are Dake Corp., Grand Haven, Michigan; the cartons are from Mead Containers of Cincinnati, Ohio.

Highway train: Hauling and pick-up and delivery are simplified with the new Wolfwagon trucks. Each Wolfwagon is a 6 to 7-meter vehicle, complete with its own powerplant, one-man cab, and all the normal controls of a truck. But up to four of them can be hooked together into a train, with one driver in the lead vehicle operating and controlling all four and each unit providing its own power. The aluminum van containers can be lifted off, leaving the driver's seat and controls on the chassis ready to take on another body. The St. Louis Car Co., of St. Louis, Mo., U.S.A., is now manufacturing the Wolfwagons under license from Wolf Engineering Corp.

turn the page

GEARED TO HANDLE PUMPING PROBLEMS



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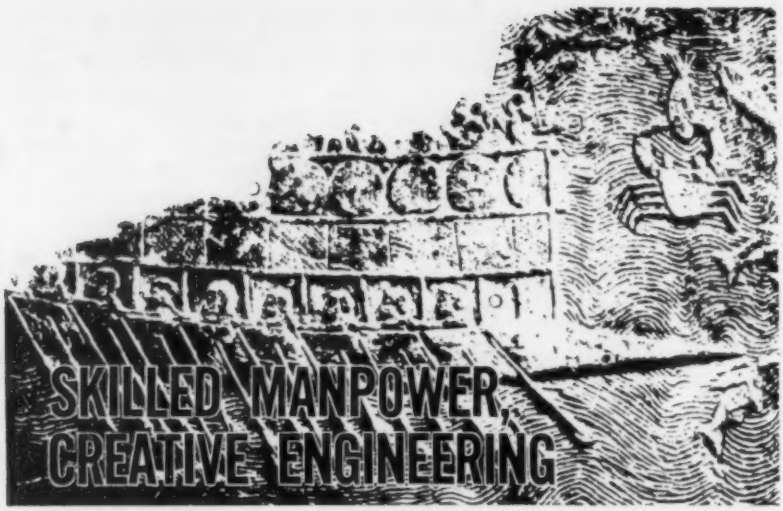

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Measuring fabrics' snag-resistance: The Defense Standards Labs. of Australia (Melbourne, Vic.) have developed a machine for determining quickly and inexpensively the resistance of fabrics to snagging. The machine consists of two rollers, around which the material travels in an endless belt. The fabric passes under a snagging point which can be loaded for various pressures. A light arm supporting the snagging point is deflected whenever the point is caught in the material being tested, and this deflection is transmitted to an electronic recorder.

Rubber in Rubber: Latex is shipped in rubber collapsible containers in the experimental shipment shown above. United States Rubber Co.'s Sealdrums, holding 1,890 liters each, would permit more flexible shipment schedules, since they can be loaded on almost any type of vessel. Normally, latex is shipped in disposable steel drums or tanks found only on specially-equipped ships. Sealdrums are easily cleaned, and prevent contamination of the air-sensitive latex.

Chemical of "unilimited uses": DuPont's new chemical, Baymal, is said to improve the properties of a dozen products ranging from cutting tools to cosmetics. Chemically, it is a white, free-flowing powder consisting of clusters of minute fibers of aluminum oxide. Like many basic chemical compounds, Baymal is designed to work in conjunction with other substances to improve the properties of materials such as paints and textiles. Major anticipated uses are: making materials heat-resistant, creating stain-resistant textiles, enabling water-based paints to cling to any surface, making stronger foam

rubber, forming extremely hard cutting tools, and improving cosmetic products. DuPont is now producing developmental quantities of the chemical but has not completed plans for building a full-scale plant.

Breakthroughs in photocopying: From France and Germany comes news of two compact machines designed to produce sharp, dry, glossy or matte prints from negatives in 10 to 15 seconds. The French machine, one of the products of Guilleminot Boesflug of Paris, makes up to 500 prints electronically in 10 seconds each. The prints are said to be sharp enough for half-tone reproduction. The Arcor, as the machine is called, will also make photostats, translucent masters, and lithograph proofs, and will copy any color. It stands about 1 meter high. No darkroom is needed for the German machine, the Fotorite processor, either. This is a portable unit that is said to develop permanently fixed, semi-dry prints in up to 15 seconds, using special paper and a patented developer and fixer. Intercop of Hamburg are the manufacturers.

New plastics family: Soft, pliable olefin plastics of a new type, similar to vinyls in many respects but offering several advantages over them, are on the way. Dow Chemical Co. of the U.S. is first on the market, but others are following suit. The materials are ethylene-ethyl acrylate copolymers. They can be injection-molded on conventional equipment, need no compounding and no plasticizers to achieve their flexibility, and are potentially low in cost.

Soundproof two-way radio: Globe Electronics division of the U.S. company Textron in Iowa has produced a soundproof earphone-mouthpiece combination containing a seven-transistor two-way radio for use chiefly in high-noise level work in foundries, or oil fields, etc. Glycerine-filled rubber pads cover the wearer's ears. The right earpiece contains the receiver circuit; the left, rechargeable batteries. The mouthpiece houses transmitter and audio control.

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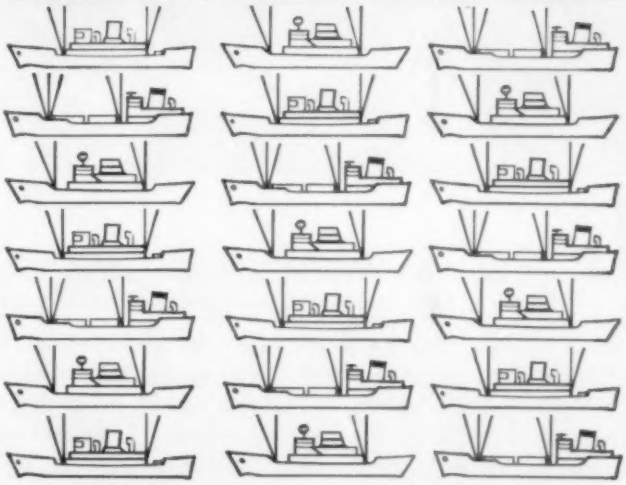

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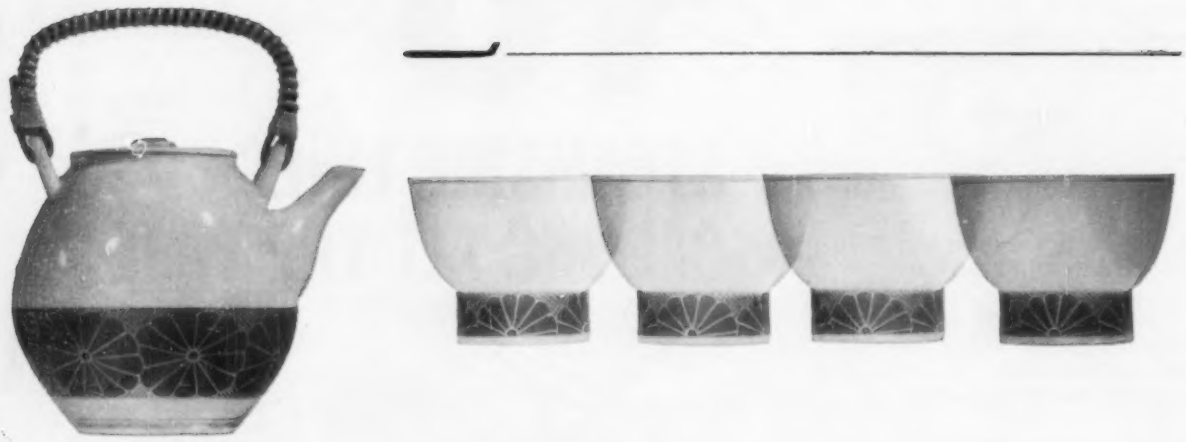

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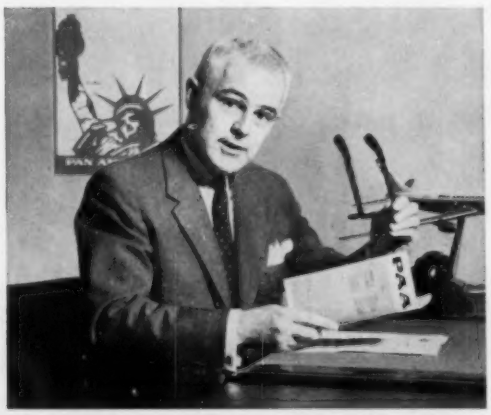

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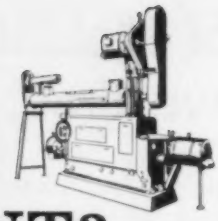

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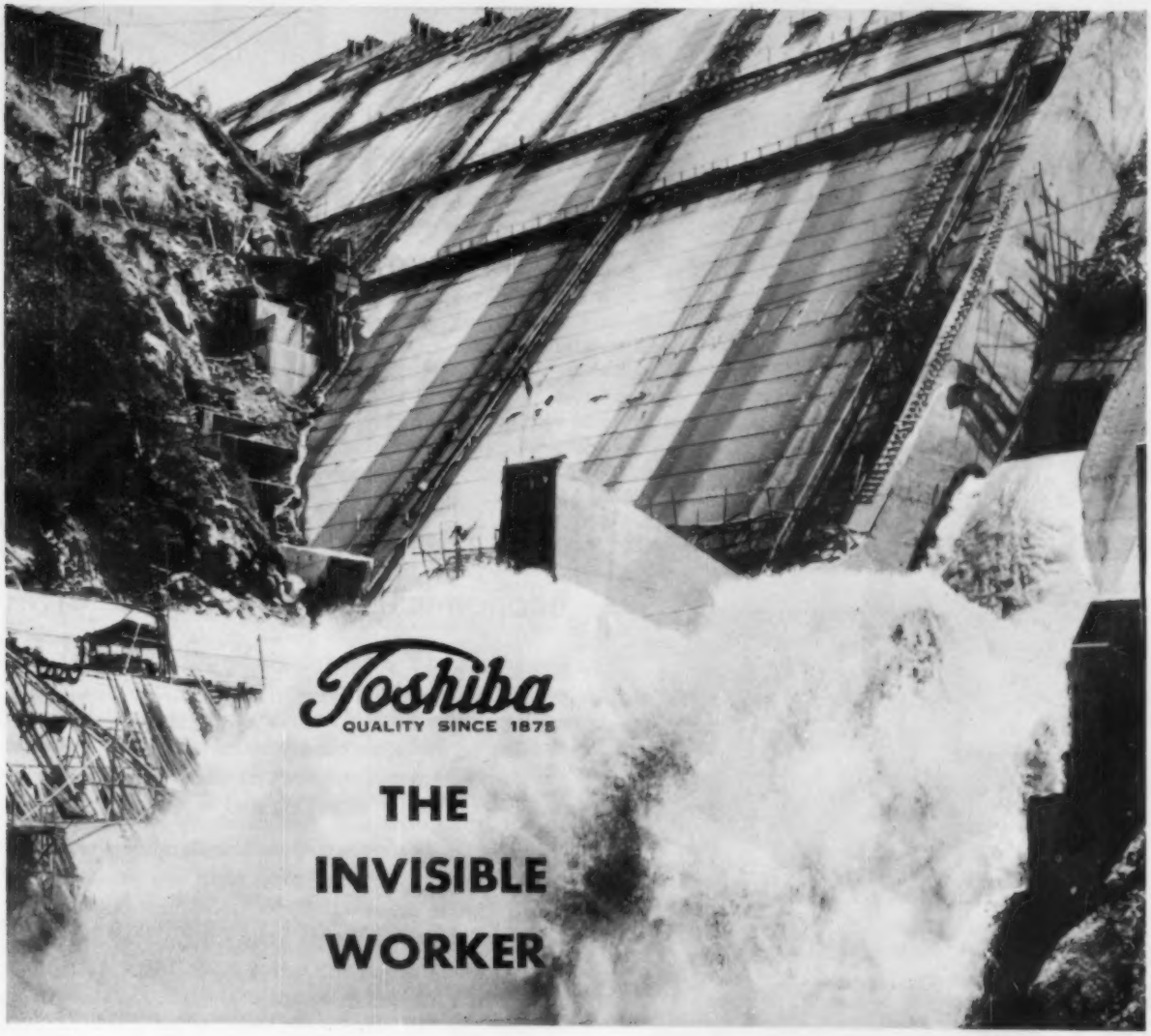

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Recommended Reading

[NEW BOOKS]

What is an executive worth? What effect do salaries and bonuses have on executive motivation? How effective are non-financial incentives? These and other questions are answered in MEN, MONEY, AND MOTIVATION, by Arch Patton. The study covers various incentive plans, how they work, why they succeed or fail, and which plan best fits a company's needs. *McGraw-Hill Book Co. Inc.*, 330 *West* 42*nd Street, New York* 36, *N.Y., U.S.A.* 233 *pages*, $7.50.

SIMULATION AND GAMING: A SYMPOSIUM—designed for the non-specialist executive—presents a frank appraisal of the effectiveness of simulation "business games" in management training. The report discusses the value of simulation as a teaching tool in business, its use in logistics policy research, and its relation to human behavior. Basic techniques are evaluated, and many types of games now in use are described. *American Management Association*, 1515 *Broadway, Times Square, New York* 36, *N.Y., U.S.A.* 136 *pages*, $3.75.

SYSTEMATIC LAYOUT PLANNING, by Richard Muther, is an authoritative and complete how-to book on plant layout—selecting a location, overall and detail layout planning and installation. Techniques for solving plant layout problems are discussed and a complete set of forms for planning a layout are included. *Industrial Education Institute*, 221 *Columbus Avenue, Boston* 16, *Mass., U.S.A.* 350 *pages*, $9.50.

What is a controller? What is his contribution to business management? The answers to these questions are given in the revised edition of PRACTICAL CONTROLLERSHIP, by David R. Anderson and Leo A. Schmidt. Included is new material on forward planning, plus an expanded list of cases. *Richard D. Irwin, Inc., Homewood, Ill., U.S.A.* $10.65.

SUPERVISORS IN ACTION, by Joseph J. Famularo, offers a well-organized and authoritative view of the supervisor's job. It discusses the planning, organizing, and controlling of human resources, and describes ways of making the best use of time, developing a better relationship with the employer and the need for maintaining good public relations. *McGraw-Hill Book Co. Inc.*, 330 *W.* 42*nd Street, New York* 36, *N.Y., U.S.A.* $4.75.

PLANNING THEORY, by Professors Preston P. LeBreton and Dale A. Henning, presents a total view of the planning process in business—from spotting a business problem, to defining it and determining a plan of action. A valuable aid for every executive, whether he runs a department, sits on a committee, or serves on a board of directors. *Prentice Hall, Englewood Cliffs, N.J., U.S.A.* 357 *pages*, $9.00.

[DIRECTORIES, REFERENCES]

Just published: An 18-volume set of directories—in English, Italian, French, German and Spanish—covering manufacturing establishments in Italy. Each volume—which can be purchased separately—provides background information on the industry it covers and lists companies and products manufactured by each. Further details can be obtained by writing to: *I. C. E. Istituto Nazionale per il Commercio con l' Estero, Via Torino* 107, *Rome, Italy.*

The 1961 COMMODITY YEAR BOOK provides data on the 101 basic world raw materials. Charts and tables show price movements, production, consumption. And there are facts about sources of supply, commodity uses, governmental activities. *Commodity Research Bureau, Inc.*, 82 *Beaver Street, New York* 5, *New York, U.S.A.* 385 *pages*, $14.45.

A new edition of AMERICAN INSTITUTIONS AND ORGANIZATIONS INTERESTED IN ASIA lists, by country or area of activity, over 1000 programs being carried out by these organizations. *Taplinger Publishing Co. Inc.*, 119 *West* 57*th Street, New York* 19, *N.Y., U.S.A.* 600 *pages*, $15.00.

BDI GERMANY SUPPLIES 1961/62 wil provide a wealth of information for the businessman seeking trade contacts with West Germany. The directory—printed in English, German, French and Spanish—lists manufacturers of more than 70,000 different types of goods and equipment. *Overseas-Post Trade Journal (Uebersee-Post), Verlag Obst & Co. Kg., Nurnberg* 2, *West Germany*. 2000 *pages*, $12.00, *DM* 50.

[REPORTS, PAMPHLETS]

The prospects for MAN-MADE FIBERS are discussed in a special *Chemical Week* report (April 15, p69). $1.00.

Factory's Engineering and Technology Report #11 will tell you all about PUMPS—their maintenance and selection. 35¢.

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KET. *American Institute of Certified Public Accountants, 270 Madison Avenue, New York 16, N.Y., U.S.A.*

Two new weekly publications will give detailed abstracts—in English—of new Japanese and Russian patents. Annual subscription price for each is $120.00 or £40. *Dept. JP, Derwent Information Service, Rochdale House, 128 Theobalds Road, London WC1, England.*

SIXTY YEARS OF BUSINESS CAPITAL FORMATION, by George Terborgh, reviews U.S. business capital spending for plant and equipment and discusses the relationship of these expenditures to contemporary measures of economic activity. *Machinery and Allied Products Institute, 1200 Eighteenth Street, N.W., Washington 6, D.C., U.S.A. 17 pages, $1.50.*

[INDUSTRY BULLETINS]

The Skil Corporation will send you their 68-page catalog containing complete information on 100 power tools for use in industry, construction, automotive service, maintenance and other applications. *Skil Corp., 5033 Elston Avenue, Chicago 30, Ill., U.S.A.*

CASE STUDIES IN MODERN LIFTPORTATION describes and illustrates 59 field-tested ways hydraulic power can be used to cut handling costs, increase production and reduce worker fatigue. *Globe Hoist Company, Industrial Lift Division, P.O. Box 4032, Philadelphia 18, Pa., U.S.A.*

Personal Business

Golfing in Europe

If you like to combine a change of scene with sport, a tour of Europe's many excellent golf courses will provide you with challenge, lovely surroundings, and a hospitable atmosphere. Usually you will find accommodations located near the course.

At most leading European courses your membership in a golf club at home will give you entree. Sometimes, though, it helps to know someone who can introduce you as a guest. Equipment usually can be rented.

In Scotland is golfdom's most hallowed club—the Royal and Ancient, at St. Andrews. It has four public courses, Jubilee, Eden, the New, and the Old, the latter loaded with tricky bunkers and hidden traps. To play at Muirfield, near Gullane on the Firth of Forth, you will need an introduction, as this is Scotland's most exclusive course.

England has a number of fine courses not far from London. At the Royal Cinque Ports club, near Deal (in Kent) high dunes circle the greens, making approach shots a challenge. Close by Sandwich (also in Kent) is Prince's. Both clubs are open to members of the Golf Society of Great Britain, which welcomes overseas visitors. You will find two more fine courses at Sunningdale Golf Club in Berkshire.

Ireland has many first-class, 18-hole courses dotted around its coast. At Portmarnock, not far from Dublin, where the 1960 Canada Cup matches took place, players walk on uniform seaside turf—but be prepared for changing sea winds that may cost you extra strokes. Another seaside course near Dublin is Woodbrook. Here there are no hills or strong winds to contend with. Prior arrangements are seldom necessary at Irish golf courses.

In France, the best place to play near Paris is the St. Cloud Golf Club in Garches, which has two 18-hole courses. On the Channel coast is the Deauville club, with 9-hole and 18-hole courses; The Cannes Country Club at Mougins has 18 holes.

The Netherlands' most centrally located course is Duivendrecht course, near Amsterdam. Situated among dunes and woods are the fashionable Kennemer Golf Club at Zandvoort, near Haarlem, and the Hilversum Golf Club. Other fine links are at Eindhoven, Twenthe, and Noordwijk.

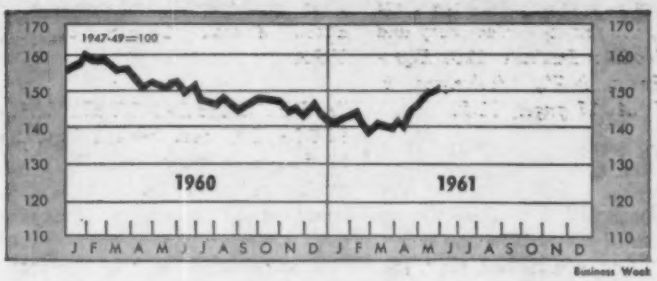
West Germany's championship courses are at Hamburg (in the Falkenstein suburb), Frankfurt, Cologne, and Krefeld golf clubs, all private. Courses are long (4,500-6,300 meters) and difficult. As a visiting business executive, you can play without being a member's guest or giving advance notice. There are also a number of resort clubs for those who prefer to mix leisurely golf with other activities. The Golf Club Baden-Baden, for example, has a golf hotel as well as the Hotel Selighof. The course is short (3,600 meters) and not difficult (par 66).

Want to brush up your golf? A new book called Sam Snead on Golf (Prentice-Hall, Inc., Englewood Cliffs, New Jersey, U.S.A., $3.95) has some good points about picking clubs: "If you play only once or twice a week," Snead says, "eliminate the number one driver, the number two wood, and the two and three irons. In their place, get a 1½ wood and a five wood, a trade which will pay dividends."

Art lovers' note

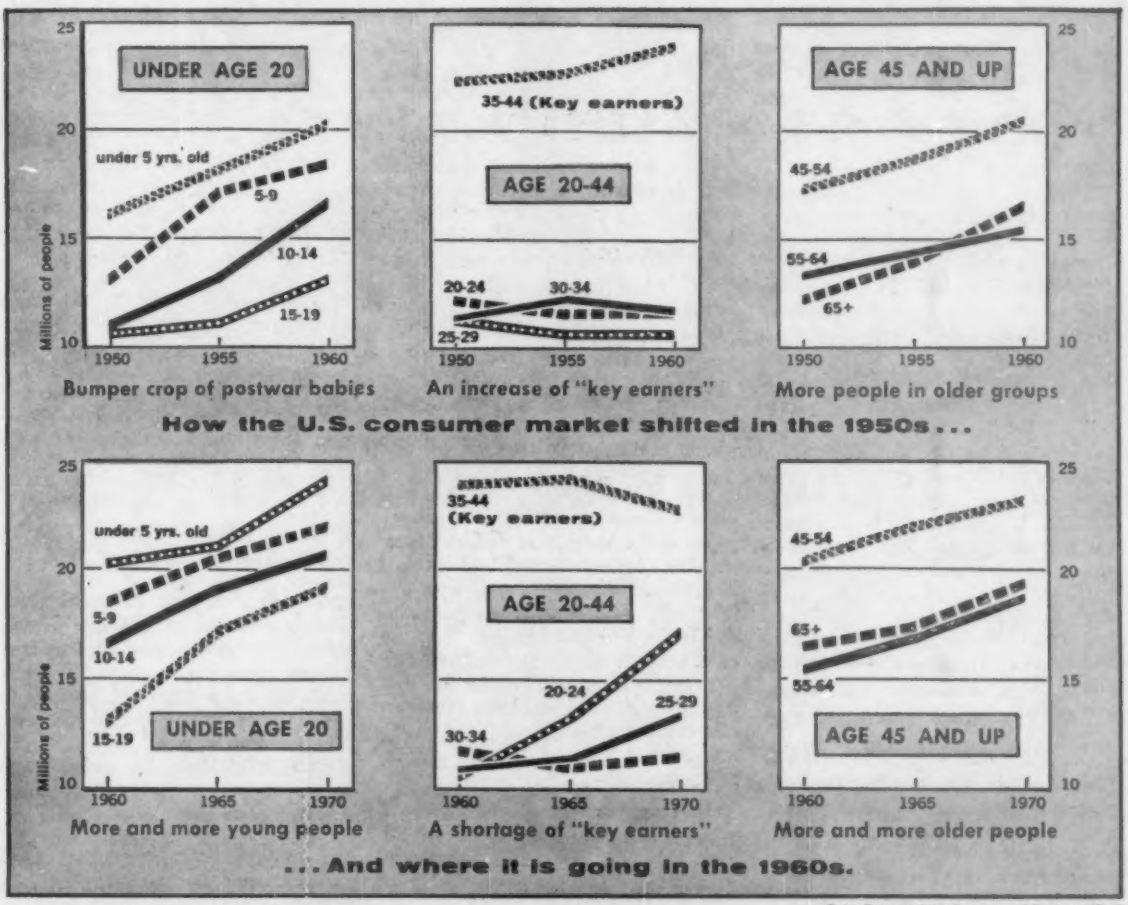
If you try to follow world market prices, you may be interested in a publication called International Art Market. This is a monthly report on prices paid for art, antique furniture, and objets d'art, at the leading auction galleries of the world. It is published by International Art Auctions, 133 E. 95th St., New York 28 (foreign subscription rate $15 per year).

Business at a Glance



U.S. Business Trend

Businessmen are saying it without any hedges: The U.S. economy has recovered. The recovery into June was sharp, with all sectors participating. Remembering that the economy usually takes a summer respite, seasonal adjustments are now in order. But with business headed for autumn with a good head of steam, new records may be ahead. A word of caution is also in order: As yet, the word is "recovery" and not "renewed growth."



The U.S.A.'s mass market continues to expand—from 151-million consumers in 1950 to 180-million in 1960.

Within the "mass" are important shifts that should be carefully studied by anyone selling to the U.S.A.

Behind the apparently serene facade of the 1950s, trouble was brewing. See how the 20-to-34 age groups lagged. This is the "depression" generation born during the 1930s, and it becomes the "key earning" generation of the 1960s. The 30-to-34 age group will also lag.

This small middle generation is being squeezed by the sharp increase of young and old people. The rapid growth of "teenagers" (14 to 19) in particular means heavy expenditures on such things as clothing, cars, recreation, education. Thus, the family man will have to stretch his income, and this could explain why "discount houses" are increasing so rapidly (see "Marketing").

Also note the sharp increase of people who will reach marrying age during the 1960s. Many couples now marry in the early 20s, but they are not a prime market until they settle down to serious homemaking. And the late-20s group will not soar until after 1965. Early marriage also means that children are leaving home at an earlier age—creating a growing market for leisure goods and services in the over-45 age bracket.

There is uncertainty about the age groups below 10 years, of course. If the birthrate changes, or if the economy falters, the projection (based on 1955-1957 birthrate) will not hold true. Higher education and urbanization are supposed to affect the birthrate but U.S. families have ignored this "theory" for two decades.

McGRAW-HILL INTERNATIONAL MANAGEMENT'S

Last-Minute Memos

Food Irradiation: About 60 research centers in West Europe now are doing work in food preservation by irradiation according to *Nucleonics*. Laboratories in France, Britain, and Germany all are active, with general emphasis on low-dose irradiation. A study group of the European Nuclear Energy Agency now plans to set up a panel for working out regulations for international acceptance of food and non-food products (such as medical supplies) that have been treated with radiation.

Cheaper Steel: Savings of 30% should come to structural-steel users now, as U.S. Steel begins commercial production of rolled shapes made from high-strength, quenched, and tempered alloy steels, reports *Engineering News-Record*. Until now fabricators had to meet the demand for high-strength sections by welding several steel plates together.

Deep in the Sea: The U.S. Congress is urging the nation's scientists to produce a "road map of the seas" on the theory that the ocean floor may one day become the decisive battleground. A bill authorizing more oceanographic research will be coming from Congress, says *Aviation Week*, and the Coast Guard will be authorized to do charting while on sea patrol.

Ghana: Construction was scheduled to begin this month on the $168-million Akosombo dam and powerhouse, the biggest of three such facilities planned for Ghana's huge Volta River hydro-aluminum development. President Kwame Nkrumah has announced award of a $44.8-million contract to Girola-Lodigianai and E. Recchi, Milan, for the 110-meter rockfill dam, the power plant, and its appurtenances.

Metal on the Move: Beryllium may be expensive, but it has a unique set of properties: It retains its strength at ultra-high temperatures; it holds its shape better than steel; it can absorb five times as much heat as copper. Because of such properties, says *Purchasing Week*, the rare metal now is moving into many nonmilitary uses. Here are some: radio socket blades and clips; bearing retainers and seals; worm gears and chain sprockets for power drives; valves, linkages, gears, and nozzles for food machinery; a wide range of components and fittings for chemical equipment.

German Steel: Germany's steel output for the first four months of this year was 11.6-million tons, up 3.8% over the same period in 1960.

Arab Labor: A special department of the Arab League secretariat in Cairo, Egypt, plans to organize an Arab Labor Organization—the first of its kind in the Arab world—bringing together representatives of labor unions, management, and governments of the ten member-states.

French Rubber: The French have entered the race for low-cost synthetic rubber production with a new isoprene process, developed by the Institut Francais du Petrole. The new process, now in 40-kilogram-per-day pilot plant operation, uses hydrocarbons containing isobutylene and formaldehyde. IFP claims that this two-stage process will produce polyisoprene at a cost cheaper than the cost of butadiene. The process also yields a by-product that can be used in the making of anti-freeze and jet-fuel additives.

Petrochemicals: New petrochemical projects are planned for both Portugal and Kuwait. Portugal's Sacor will erect a million-ton-per-year refinery at Oporto that will have facilities for distillation, reforming, catalytic cracking, and desulfurization. And in Kuwait, Sheik Abdullah has confounded skeptics (IM—June, p4) by signing a decree authorizing the Kuwait Petrochemicals Co. Ltd. The new company, partially owned by Italy's Oronzio de Nora, soon will begin construction of a $45-million petrochemical and fertilizer complex.

Pre-Selling: West German advertising expenditures rose a good 15.4% last year. Of the $525-million spent, $475-million went to newspapers and magazines. The sharp increase came in part from two conditions: increasing competition from foreign companies, and a scarcity of sales help, which forces German firms to rely more on promotion and pre-contract sales preparation.

More Textiles: Italy's textile industry is growing fast, reports *Textile World*. Output of silks in 1960 was 36.4% above 1953; cotton, 26.2%; woolens, 12.4%; cellulosic fibers, 188%. The Italian government may be a step ahead of the U.S. (see p15), for it is urging its silk industry to modernize by offering 10-year loans at 3% for new machinery.

For the U.S. Motorists: Machines that dispense life insurance are being installed in U.S. service stations. For a $1 premium, a motorist gets a $7,500 policy good for a week—provided he maintains a charge account at the service station and pays his bills promptly.

And the British Investor: Unicorn Securities Ltd., a mutual fund distributor in London, is offering its customers a chance to insure their investment in one income fund—Falcon Trust—against capital loss for ten years, by payment of a premium of about 5%. "Either this is just another selling gimmick," says one London broker, "or it is the greatest thing since the invention of the wheel."

Clear Nylon: Nylon with a transparency close to that of glass has been developed by E. I. du Pont de Nemours & Co. *Product Engineering* reports that it is now being evaluated for such applications as business-machine part covers and food and dairy equipment shields and windows.

Ura! A system designed to translate Russian technical literature into English at the rate of 100 words a second is scheduled to go into operation this fall. Consisting of three parts—print-reader, translator, lexical-graphical printer—the system was developed by three companies for the U.S. Air Force.

BUSINESS THROUGHOUT THE WORLD DEPENDS ON BURROUGHS

Singer Nähmaschinen A. G., of Frankfurt reports on the Sensitronic, a highly automated electronic bookkeeping machine.

"Burroughs electronic bookkeeping machines combine accounting of seven offices into one controlled, central operation"

"Previously our customer installment accounts were all handled by district offices. This duplication of clerical work was costly and made strict financial control difficult. Using only Burroughs Sensitronics, we now combine the receivables accounting of our seven offices into one controlled, central operation at Frankfurt. These electronic marvels store immediately accessible data on magnetic stripes, enabling each account to remember its own balance and other valuable information. Sensitronics save us hundreds of clerical hours per month and make auditing of accounts a simple matter. And they are so automatic, they virtually eliminate errors." W. Korb, Finanzdirektor, Singer Nähmaschinen A. G., Frankfurt, Germany.

AUSTRALIA

J. BLACKWOOD & SON, Ltd. (Industrial suppliers—steel merchants) reports from Sydney, "The production from our Burroughs Typing Sensimatic accounting machines and the savings far exceed our original estimations."

ENGLAND

MECCANO, Ltd. (Construction sets) reports from Liverpool, "It has been an especially good investment for us to use the Burroughs Sensimatic accounting machine. We estimate a saving of 40% in all accounting operations."

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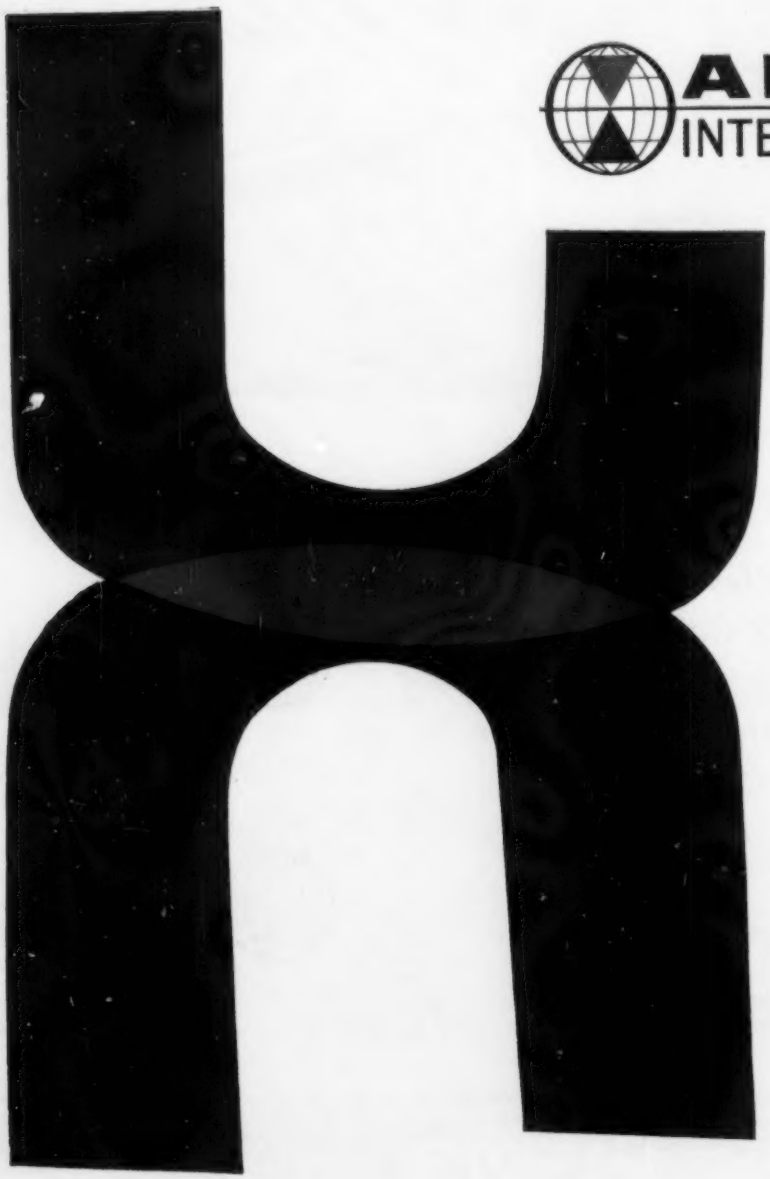

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